HP ProLiant BL e-Class System Setup and Installation Guide

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About This Guide

This guide provides step-by-step instructions for installation and reference information for operation, troubleshooting, and future upgrades for the HP ProLiant BL e-Class system.

Audience Assumptions

This guide is for the person who installs, administers, and troubleshoots servers. HP assumes you are qualified in the servicing of computer equipment and trained in recognizing hazards in products with hazardous energy levels.

⚠ Important Safety Information

Before installing this product, read the *Important Safety Information* document included with the server.

Symbols on Equipment

The following symbols may be placed on equipment to indicate the presence of potentially hazardous conditions:

WARNING: This symbol, in conjunction with any of the following symbols, indicates the presence of a potential hazard. The potential for injury exists if warnings are not observed. Consult the documentation for specific details.

This symbol indicates the presence of hazardous energy circuits or electric shock hazards. Refer all servicing to qualified personnel.

WARNING: To reduce the risk of injury from electric shock hazards, do not open this enclosure. Refer all maintenance, upgrades, and servicing to qualified personnel.

This symbol indicates the presence of electric shock hazards. The area contains no user or field serviceable parts. Do not open for any reason.

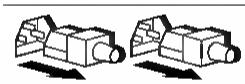
WARNING: To reduce the risk of injury from electric shock hazards, do not open this enclosure.

This symbol on an RJ-45 receptacle indicates a network interface connection.

WARNING: To reduce the risk of electric shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.

This symbol indicates the presence of a hot surface or hot component. If this surface is contacted, the potential for injury exists.

WARNING: To reduce the risk of injury from a hot component, allow the surface to cool before touching.



These symbols, on power supplies or systems, indicate that the equipment is supplied by multiple sources of power.

WARNING: To reduce the risk of injury from electric shock, remove all power cords to completely disconnect power from the system.

Weight in kg
Weight in lb

This symbol indicates that the component exceeds the recommended weight for one individual to handle safely.

WARNING: To reduce the risk of personal injury or damage to the equipment, observe local occupational health and safety requirements and guidelines for manual material handling.

Rack Stability

WARNING: To reduce the risk of personal injury or damage to the equipment, be sure that:

- **The leveling jacks are extended to the floor.**
- **The full weight of the rack rests on the leveling jacks.**
- **The stabilizing feet are attached to the rack if it is a single-rack installation.**
- **The racks are coupled together in multiple-rack installations.**
- **Only one component is extended at a time. A rack may become unstable if more than one component is extended for any reason.**

Symbols in Text

These symbols may be found in the text of this guide. They have the following meanings.

WARNING: Text set off in this manner indicates that failure to follow directions in the warning could result in bodily harm or loss of life.

CAUTION: Text set off in this manner indicates that failure to follow directions could result in damage to equipment or loss of information.

IMPORTANT: Text set off in this manner presents essential information to explain a concept or complete a task.

NOTE: Text set off in this manner presents additional information to emphasize or supplement important points of the main text.

Related Documents

For additional information on the topics covered in this guide, refer to the following documents:

- *HP ProLiant BL e-Class System Maintenance and Service Guide*
- *HP ProLiant BL e-Class System Hardware Installation and Configuration* poster
- *HP ProLiant BL e-Class Integrated Administrator User Guide*
- *ProLiant Integration Module for Altiris eXpress User Guide*
- *HP Servers Troubleshooting Guide*
- *HP ROM-Based Setup Utility User Guide*
- *HP ProLiant BL e-Class C-GbE Interconnect Switch User Guide*
- White paper: *HP ProLiant BL e-Class System Overview and Planning*
- White paper: *Configuring a Preboot eXecution Environment (PXE) using Red Hat Linux 7.2 on ProLiant Servers*
- QuickSpecs

Getting Help

If you have a problem and have exhausted the information in this guide, you can get further information and other help in the following locations.

Technical Support

In North America, call the HP Technical Support Phone Center at 1-800-652-6672. This service is available 24 hours a day, 7 days a week. For continuous quality improvement, calls may be recorded or monitored. Outside North America, call the nearest HP Technical Support Phone Center. Telephone numbers for worldwide Technical Support Centers are listed on the HP website, www.hp.com.

Refer to the *HP Servers Troubleshooting Guide* for a list of information you need before contacting HP.

HP Website

The HP website has information on this product as well as the latest drivers and flash ROM images. You can access the HP website at www.hp.com.

Authorized Reseller

For the name of the nearest authorized reseller:

- In the United States, call 1-800-345-1518.
- In Canada, call 1-800-263-5868.
- Elsewhere, see the HP website for locations and telephone numbers.

Reader's Comments

HP welcomes your comments on this guide. Please send your comments and suggestions by e-mail to `ServerDocumentation@hp.com`.

1

System Features

The HP ProLiant BL e-Class server blade system offers space- and power-efficient performance and serviceability in a 3U rack-mounted enclosure. This state-of-the-art modular system supports rapid server configuration and deployment flexibility.

ProLiant BL e-Class System Technology

The ProLiant BL e-Class system offers the following key technological advantages:

- Higher density for space efficiency (up to 280 single-processor ProLiant BL e-Class server blades in a 42U rack)
- Rapid deployment and redeployment
  - — Snap-in, toolless installation of rack components and server blades
  - — Reduced number of rack components
  - — Interconnect tray options to customize network cabling
- Power efficiency in an ultra-low voltage processor
- Integrated remote management and Web-based systems management, including headless operation
- Support for ProLiant Essentials Rapid Deployment Pack
  - — Graphical console for software installation
  - — Flexibility for imaging and scripted installs
  - — Simultaneous deployment of many servers with minimal network load

- Configuration flexibility and scalability
  - — Support for partial rack and partial enclosure installations
  - — Compatibility with HP, Compaq branded, telco, and third-party racks
- High availability
  - — Redundant hot-plug power supplies
  - — Redundant hot-plug fans
  - — Two embedded NICs available for LAN segmentation, network fault tolerance, or load balancing
- Rapid servicing
  - — Modular component design enables easy upgrades and service
  - — Major components accessible from the front and rear of the enclosure
  - — Support for in-rack diagnostic methods

Hardware Features

The ProLiant BL e-Class system is comprised of a rack-mount server blade enclosure that contains advanced electronics for managing up to 20 single-processor ProLiant BL e-Class server blades.

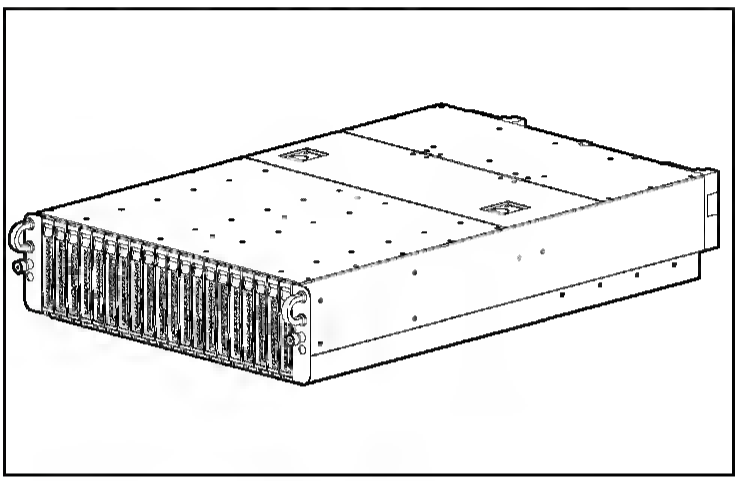


Figure 1-1: ProLiant BL e-Class server blade enclosure with ProLiant BL e-Class server blades (20)

The enclosure and server blade features described in the following sections are standard on all ProLiant BL e-Class systems, unless otherwise specified.

ProLiant BL e-Class Server Blade Enclosure Features

Server blade enclosure features include:

- 3U height and standard 48 cm (19 in) width
- Support for up to 20 server blades
- Choice of interconnect tray option:
  - — Interconnect switch with four Gigabit Ethernet uplink connectors
  - — Patch panel with four RJ-21 connectors
  - — Patch panel with 40 RJ-45 connectors
- ProLiant BL e-Class Integrated Administrator for local and remote management and monitoring
- Redundant power
- Redundant cooling
- System bealth LEDs

ProLiant BL e-Class Integrated Administrator

ProLiant BL e-Class Integrated Administrator features include:

- Local and remote access to enclosure and server blade information
- Secure Shell, Telnet, and Secure Sockets Layer (SSL) Web access
- Remote power on/off/reboot and Unit Identification (UID) controls
- Access to any server blade remote console
- Access to any server blade ROM-Based Setup Utility (RBSU)
- Support for command line scripting
- Upgradeable firmware

Redundant Power

The server blade enclosure includes two 600-W redundant hot-plug power supplies with:

- 1 + 1 redundancy
- Integrated hot-plug capability
- Autosensing input voltage range from 100 to 127 VAC and 200 to 240 VAC
- Load-sharing across all server blades

Redundant Cooling

The server blade enclosure ships with four redundant hot-plug fans. These fans offer:

- 2 + 2 redundancy
- Hot-swapping among all fan positions
- Variable-speed fans
- Individual fan status LEDs

ProLiant BL e-Class C-GbE Interconnect Switch (Option)

The ProLiant BL e-Class C-GbE Interconnect Switch benefits include:

- Significant cable reduction (40 server blade NIC connections to 4 Gigabit Ethernet uplink connectors)
- Interconnect tray form factor that fits into server blade enclosure
- Low wattage for maximum power efficiency
- Compatibility with common core switches
- Two separate switches providing redundant paths to each server blade

System Health LEDs

System health information is displayed locally through a full set of system LEDs, including:

- Internal fan health LEDs
- External health LEDs
  - — Fan health LED
  - — Enclosure health LED
  - — Server blade LEDs
  - — Power supply LEDs
  - — Integrated Administrator health LED

ProLiant BL e-Class Server Blade Features

The ProLiant BL e-Class server blades are simple to install, deploy, and service. A server blade that requires out-of-the-rack upgrades, service, or maintenance can be easily replaced by another server blade.

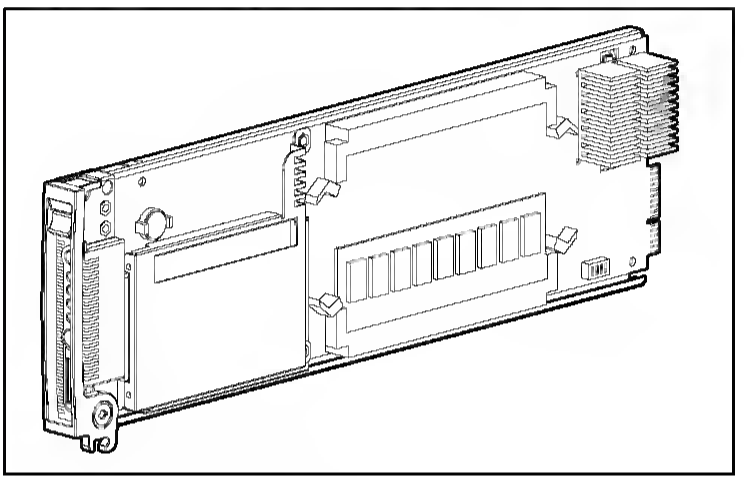


Figure 1-2: ProLiant BL10e server blade

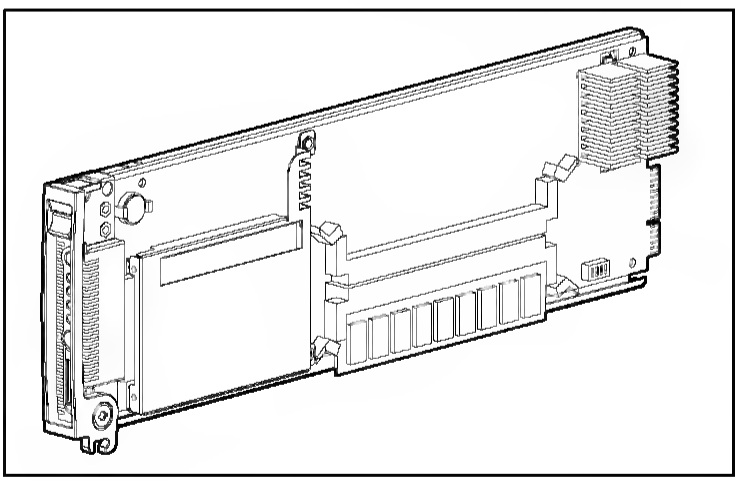


Figure 1-3: ProLiant BL10e G2 server blade

All ProLiant BL e-Class server blades support server system architecture technology, including the following:

- Processor
- Memory
- Mass storage with Self-Monitoring Analysis and Reporting Technology (S.M.A.R.T.)
- Server blade status and monitoring
- Video
- ROM
- NICs

Processor

Each ProLiant BL10e server blade ships with an integrated ultra low voltage Intel® Pentium® III processor with 512 K cache. Each ProLiant BL10e G2 server blade ships with an integrated ultra-low voltage Intel Pentium M processor with 1 MB cache.

CAUTION: The processor heatsink assembly is integrated into the system board and cannot be removed.

Memory

The server blade supports the following memory features:

- Registered SDRAM memory for the ProLiant BL10e server blade; Registered DDR SDRAM memory for the ProLiant BL10e G2 server blade

  For more information, refer to QuickSpecs located on the HP website:

  www.hp.com

- ECC memory
  - — Detects and corrects single-bit memory errors

— Detects multi-bit memory errors

- System memory expandable to 1 GB
- Two DIMM slots

Mass Storage

The server blade ships with one ATA hard drive attached with screws. Each hard drive features S.M.A.R.T.

S.M.A.R.T. is a drive-level function that notifies Insight Manager 7 of an impending hard drive failure. S.M.A.R.T. is part of the Pre-Failure Warranty, and enables a problematic drive to be replaced before the actual failure occurs.

Server Blade Status and Monitoring

A server blade provides the following status and monitoring features:

- Server blade UID LED and button
- Server blade health LED
- Server blade network activity LEDs
- Hard drive activity LED
- Power button and LED
- Diagnostic support through ROM-Based Setup Utility (RBSU), the Integrated Management Log (IML), health driver, and Insight Manager 7

Diagnostic Adapter

Each server blade has a diagnostic connector that delivers the following capabilities using the diagnostic adapter that ships with the enclosure:

- USB connectivity for two USB devices including diskette drive, CD-ROM drive, keyboard, and mouse
- PS/2 connectivity for keyboard and mouse
- Video connectivity through a standard 15-pin VGA connector

- Serial connectivity using a DB-9 connector

Video

The ProLiant BL e-Class server blades support video through the diagnostic adapter. Video features include:

- Support for SVGA, VGA, and EGA graphics resolution
- 8-MB SDRAM video memory

ROM

ProLiant BL e-Class server blade ROM features include:

- Redundant ROM support
- Integrated RBSU support
- ROMPaq Utility used to upgrade the system ROM
- Hardware boot block protection
- Remote ROM flash support
- Bootable USB diskette drive

NICs

The two embedded NICs on the server blade have the following features:

- Embedded 10/100-Mbps Intel 82559 Fast Ethernet NICs
- Preboot eXecution Environment (PXE) support
- Wake-on-LAN (WOL)
- Auto-negotiation of 10/100-Mbps link speeds
- Full-duplex Ethernet support
- Teaming for network fault tolerance or load balancing (also known as port bonding or trunking)

Software Deployment and Management Features

HP offers an extensive set of features and optional tools to support effective software deployment and management. See Chapter 4, "Deployment and Management," for more detailed descriptions of the following:

- ProLiant BL e-Class Integrated Administrator

  The ProLiant BL e-Class Integrated Administrator is a centralized management and monitoring system for the ProLiant BL e-Class enclosure and server blades. The Integrated Administrator acts as a combination terminal server and remote power controller, enabling out-of-band, secure, serial console connections to all server blades in the enclosure.

- ROM-Based Setup Utility (RBSU)

  RBSU performs a wide range of configuration activities and provides access to numerous settings, including those for system devices and operating system selection.

- Redundant ROM support

  Each server blade has two 1-MB ROM images: one of which contains the current version of the ROM, while the second contains a backup version of the ROM. If the first ROM becomes corrupt, the system defaults to the backup version, maximizing uptime and server availability.

- Rapid Deployment Pack

  Rapid Deployment Pack features include:

  — A graphical deployment console which provides intuitive drag-and-drop events, such as scripts and images, to deploy the operating systems and applications on any combination of server blades installed in the enclosures

  — Simultaneous deployment of multiple server blades

— Advanced features that can detect and display server blades based on their physical rack, enclosure, and bay locations

— The ability to set the deployment console to automatically install pre-defined configurations on newly-installed server blades

For more information about Rapid Deployment Pack, refer to an authorized reseller, the Rapid Deployment CD that ships with the enclosure, or visit the HP website:

www.hp.com

- Insight Manager 7

  Insight Manager 7 is an easy-to-use, intuitive software utility designed for collecting server information, including fault conditions, performance, security, remote management, and recovery services.

- Diagnostics Utility

  The Diagnostics Utility displays information about a server blade's hardware and tests the system to ensure it is operating properly.

- Automatic Server Recovery-2 (ASR-2)

  ASR-2 is a diagnostic/recovery feature that automatically restarts the server blade in the event of a critical operating system failure.

- Enclosure Self Recovery (ESR)

  ESR, similar to ASR-2, is a self-monitoring reliability feature of the Integrated Administrator. If the Integrated Administrator does not boot or hangs during operation, ESR automatically resets the Integrated Administrator for an attempted self-recovery. The server blades and interconnect tray are not affected by ESR.

- Integrated Management Log (IML)

  The IML provides a detailed log of key system events. This log, which also monitors the server health log, is accessible by utilities, including Insight Manager 7.

- ROMPaq

  ROMPaq enables you to upgrade the firmware (BIOS) with system or option ROMPaq utilities.

- Online ROM Flash

  Using the Smart Components for Remote ROM Flash with the Remote Deployment Utility (RDU) console application, Remote ROM Flash enables you to upgrade the firmware (BIOS) on a server from a remote location.

- ProLiant BL e-Class C-GbE Interconnect Switch (Option)

  The ProLiant BL e-Class C-GbE Interconnect Switch is one of three interconnect tray options available for server blade network connections. The interconnect switch concentrates the 40 10/100 Ethernet server blade network connections into four Gigabit Ethernet uplink connectors. Each uplink can communicate with all 40 of the server network connections; thus, only one to all four of these connectors may be used providing up to a 40-to-1 reduction in the number of network cables connected to the enclosure. The interconnect switch is compatible with industry standards and is fully pre-configured for immediate use.

For more information about these tools and utilities, see Chapter 4, "Deployment and Management."

Diagnostic Features

The hardware, software, and firmware diagnostic tools that are available include:

- ProLiant BL e-Class Integrated Administrator
- Diagnostic adapter for local server blade access
- Insight Manager 7
- Power-On Self Test (POST)
- Diagnostics Utility
- Survey Utility
- ROMPaq
- ECC memory
- S.M.A.R.T.
- Health monitoring LEDs

Pre-Failure Warranty

ProLiant BL e-Class server blades include a Pre-Failure Warranty for the processors, hard drives, and memory purchased from HP through authorized resellers. Under the terms of its warranty, supported components are eligible for replacement before they actually fail provided that you use Insigbt Manager 7 and that the server blade determines that the supported components have degraded below predetermined reliability thresholds within the product warranty period.

When Insight Manager 7 alerts you that a component may be eligible for Pre-Failure Warranty replacement, follow the on-screen instructions or contact an autborized service provider in the area. A status indicator on the Insight Manager 7 control panel signals that a component is in a degraded condition and prompts you to replace the component in its pre-failure condition.

For specific coverage information, refer to the warranty card that ships with the ProLiant BL e-class server blades.

2

Planning the Installation

Optimum Environment

For maximum performance and availability from the ProLiant BL e-Class system, be sure that the operating environment meets the required specifications for the following:

- Floor strength
- Space
- Power
- Electrical grounding
- Temperature
- Airflow

For detailed information on these requirements, refer to the *HP ProLiant BL e-Class System Overview and Planning* white paper on the Documentation CD and at the HP website:

www.hp.com

Rack Warnings

Before installing the rack, observe the following warnings:

WARNING: To reduce the risk of personal injury or equipment damage, be sure that:

- **The rack is adequately stabilized before installing or removing a component.**
- **Only one component is extended at a time.**
- **The leveling jacks are extended to the floor.**
- **The full weight of the rack rests on the leveling jacks.**
- **The stabilizers are attached to the rack for single-rack installation.**

WARNING: To reduce the risk of personal injury or equipment damage, AT LEAST two people are needed to safely unload the rack from the pallet. An empty 42U rack can weigh as much as 115 kg (253 lb), can stand more than 2.1 m (7 ft) tall, and may become unstable when being moved on its casters.

Never stand in front of the rack when it is rolling down the ramp from the pallet; always handle the rack from both sides.

WARNING: When installing the enclosure in a telco rack, be sure that the rack frame is adequately secured to the top and bottom of the building structure.

CAUTION: When using a Compaq branded 7000 Series rack, you must install the high airflow rack door insert [P/N 327281-B21 (for 42U rack) and P/N 157847-B21 (for 22U rack)] to provide proper front-to-back airflow and cooling and to prevent damage to the equipment.

CAUTION: If an HP or third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment:

- Front and rear doors: If the 42U server rack includes closing front and rear doors, you must allow 5,350 sq cm (830 sq in) of holes evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation).
- Side: The clearance between the installed rack component and the side panels of the rack must be a minimum of 7 cm (2.75 in).

CAUTION: Always use blanking panels to fill all remaining empty front panel U-spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage.

ProLiant BL e-Class Server Blade Enclosure Warnings and Cautions

Before installing the ProLiant BL e-Class server blade enclosure, carefully review the following warnings and cautions:

WARNING: To reduce the risk of personal injury or damage to equipment, heed all warnings and cautions throughout the installation instructions.

WARNING: A risk of injury or damage to the equipment from hazardous energy is present. The access door provides access to hazardous energy circuits. The door should remain locked during normal operation or troubleshooting, or the server should be installed in a controlled access location where only qualified personnel have access to the server.

WARNING: To reduce the risk of electric shock or damage to the equipment:

- **Only enter or perform service on specific parts of the ProLiant BL e-Class system as instructed in the user documentation.**
- **Do not disable the power cord grounding plugs. The grounding plugs are an important safety feature.**
- **Plug both power cords into a grounded (earthed) electrical outlet that is easily accessible at all times.**
- **Unplug the power cords from the power supplies to disconnect power to the enclosure.**

WARNING: To reduce the risk of personal injury from hot surfaces, allow the internal system components to cool before touching them.

WARNING: The ProLiant BL e-Class server blade enclosure is very heavy. To reduce the risk of personal injury or damage to the equipment:

- **Observe local occupational health and safety requirements and guidelines for manual material handling.**
- **Remove server blades and power supplies from the enclosure before installing or removing the enclosures.**
- **Use caution and get help to lift and stabilize an enclosure during installation or removal, especially when the enclosure is not fastened to the rack. If the enclosure is being loaded into the rack above chest level, a third person MUST assist with aligning the enclosure with the rails while the other two people support the weight of the enclosure.**

WARNING: The ProLiant BL e-Class server blade enclosure has two power cords for redundant AC power sources. If it is necessary to remove power for servicing, disconnect all power by removing both power supply cords from either the wall or the AC connectors on the rear of the enclosure.

CAUTION: When servicing non-hot-plug components, you must power down the server blades and/or the enclosure and server blades. However, it may be necessary to leave the server blades powered up when performing other operations, such as hot-plug replacement or troubleshooting.

CAUTION: Protect the equipment from power fluctuations and temporary interruptions with a regulating UPS device. This device protects the hardware from damage caused by power surges and voltage spikes and keeps the system in operation during a power failure.

CAUTION: Always be sure that equipment is properly grounded before beginning any installation procedure. Electrostatic discharge resulting from improper grounding can damage electronic components. For more information, see Appendix B, "Electrostatic Discharge."

CAUTION: Do not remove a power supply without having a replacement ready to install. A failed power supply must remain in the system for proper airflow to prevent overheating while the system is operating.

Preparing for Software Deployment

To prepare for software deployment, you must first set up Rapid Deployment Pack or another deployment method. These deployment methods are discussed in Chapter 4, "Deployment and Management."

Rapid Deployment Pack

To deploy the server blades using Rapid Deployment Pack, be sure that you have a DHCP server for IP address assignment, a deployment server (can be the same system as the DHCP server), and the Rapid Deployment Pack CD included with the enclosure. To install Linux software on target servers, you must have FTP software running on the Deployment Server. Refer to the *ProLiant Integration Module for Altiris eXpress User Guide* for details about setting up the FTP software on the deployment server.

Alternate Deployment Method

If you are not using Rapid Deployment Pack, use your preferred deployment methodology. Note that you cannot install an operating system from a CD onto the ProLiant BL e-Class server blades using a USB CD-ROM drive. However, the NICs on the server blades are PXE-enabled, and the server blades support a bootable USB diskette drive (attached using the diagnostic adapter).

Shipping Contents

IMPORTANT: All the rack mounting hardware necessary for installing the ProLiant BL e-Class server blade enclosure into an HP, Compaq branded, or third-party rack is included with the enclosure. For telco racks, a separate option kit with telco rack mounting hardware is available.

For detailed information on deployment options and infrastructure, refer to the *HP ProLiant BL e-Class System Installation and Planning* white paper on the Documentation CD.

Server Blade Enclosure

The ProLiant BL e-Class server blade enclosure ships with the following:

- Two redundant hot-plug power supplies and power cords
- Four redundant hot-plug fans
- Server blade blanks
- Two diagnostic adapters
- ProLiant Essentials Foundation Pack for ProLiant BL Servers
- Rack mounting hardware for HP, Compaq branded, and third-party racks
- Null-modem cable

CAUTION: Always install either a server blade or a server blade blank in each server blade bay to maintain proper airflow and cooling. Improper airflow can lead to thermal damage.

CAUTION: Do not remove a power supply without a replacement ready to install. A failed power supply must remain in the system for proper airflow to prevent overheating while the system is operating.

Rack Mounting Hardware

Figure 2-1 and Table 2-1 show the standard rack mounting hardware (for HP, Compaq branded, and third-party racks) that ships with the ProLiant BL e-Class server blade enclosure. When shipping a server blade enclosure installed in a rack, secure the enclosure to the rack using the shipping bracket option kit (part number 293119-B21). Refer to the documentation in the option kit for more information.

IMPORTANT: All the rack mounting hardware necessary for installing the ProLiant BL e-Class server blade enclosure into an HP, Compaq branded, or third-party rack is included with the enclosure. For telco racks, a separate option kit with telco rack mounting hardware is available.

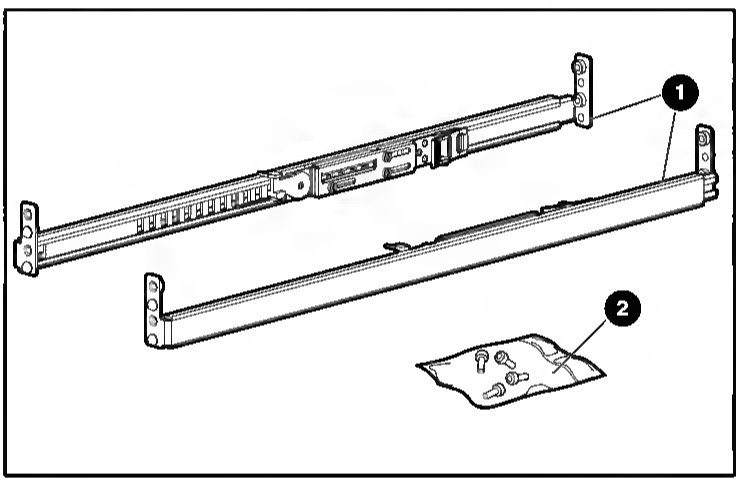


Figure 2-1: ProLiant BL e-Class standard rack mounting hardware

Table 2-1: ProLiant BL e-Class Standard Rack Mounting Hardware

Item	Description
1	Rack rails (2, left and right)
2	Bag of screws
Not shown	Enclosure rack template

Rack rails have the following features:

- Adjustable depth of 61 cm to 91 cm (24 in to 36 in)
- Depth indicator, visible in the middle of the rail
- "L" and "R" markings to identify left and right rack rails (from the front of the rack)

Server Blades

Server blades ship in packages of one or ten server blades.

Interconnect Trays

The ProLiant BL e-Class system supports an interconnect tray offered in a choice of configurations:

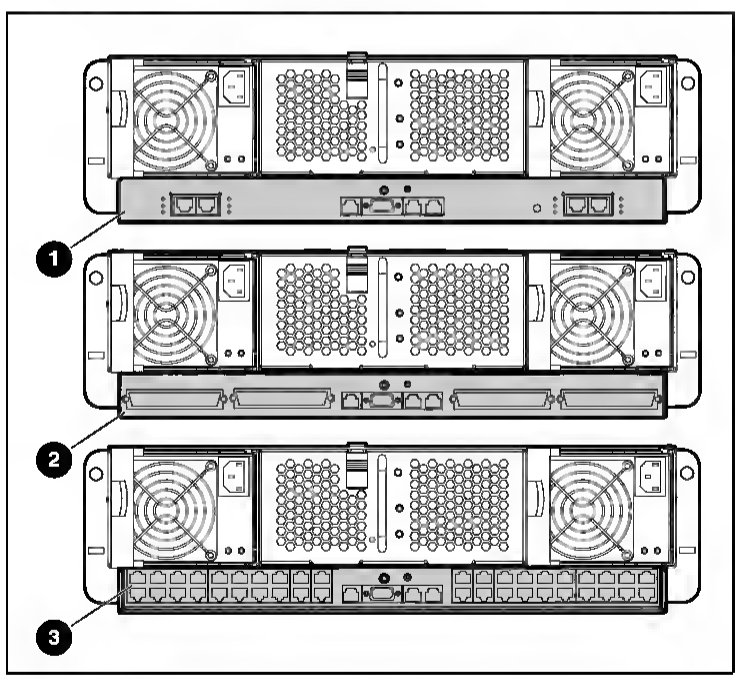


Figure 2-2: The available interconnect trays

Table 2-2: Interconnect Tray Configurations

Item	Description
1	Interconnect switch
2	RJ-21 patch panel
3	RJ-45 patch panel

Optional Installation Service

You may choose to have HP install the ProLiant BL e-Class system. This method helps ensure top performance from the start. The installation service can be purchased as an HP Care Pack packaged service or as a customized service agreement to meet the specific requirements. Some HP Care Pack services are as follows:

- HP Care Pack Installation Services for Hardware
- HP Care Pack Hardware and Operating System Installation for ProLiant Servers
- HP Care Pack Installation and Start-up Services for the Microsoft Windows 2000 operating system
- HP Care Pack Installation and Start-up Services for Insight Manager

Visit the HP website for detailed descriptions of these HP Care Pack services.

This optional hardware installation service is available in all countries where HP has a direct or indirect service presence. Service may be ordered from and directly provided by an authorized service reseller or, in the United States only, service may be ordered by calling 1-800-652-6672. In the United States, HP makes all the arrangements to have the ProLiant BL e-Class system installed by qualified guaranteed service providers. For ordering information, refer to the HP Care Pack website:

www.hp.com/services/carepack

3

Installing and Cabling the System

This chapter contains the following procedures:

- Installing the interconnect tray in the enclosure
- Measuring with the rack template
- Installing the rack rails
- Installing the enclosure into the rack
- Cabling the ProLiant BL e-Class system
  - — Identifying interconnect tray connectors
  - — Cabling the enclosure
- Powering up the ProLiant BL e-Class system
- Powering down the ProLiant BL e-Class system
  - — Powering down a server blade
  - — Powering down the enclosure
- Installing a server blade
- Removing a server blade
- Installing additional memory
- Attaching the diagnostic adapter

Installing the Interconnect Tray

Before installing an interconnect tray into the enclosure, you must first purchase one as an option. The Integrated Administrator module is included with each interconnect tray.

NOTE: The installation procedure is the same for any interconnect tray.

To install the interconnect tray:

1. Press the port-colored latch to release one hot-plug power supply (1).

NOTE: Port-color indicates hot-plug components.

2. Open the handle (2).
3. Slide the hot-plug power supply out of the enclosure (3).

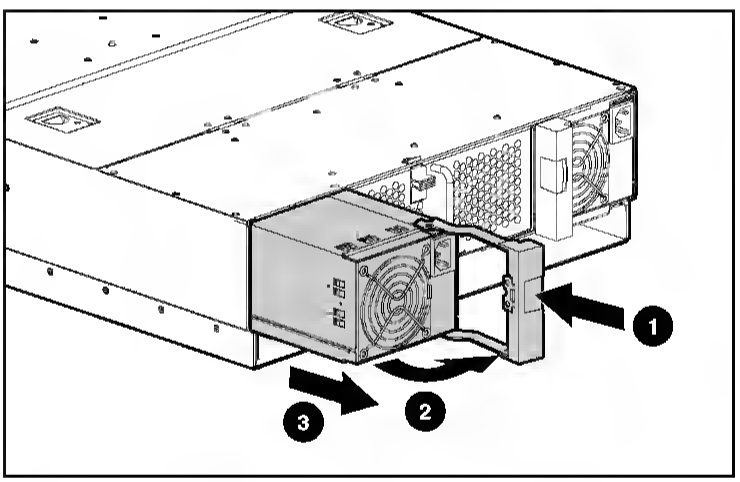


Figure 3-1: Removing a hot-plug power supply

4. Repeat steps 1 through 3 to remove the other hot-plug power supply.

5. Press the interconnect tray release buttons (1).
6. Pull the slate blue ejector levers toward the rear of the enclosure (2).

NOTE: Slate blue indicates internal touch point components.

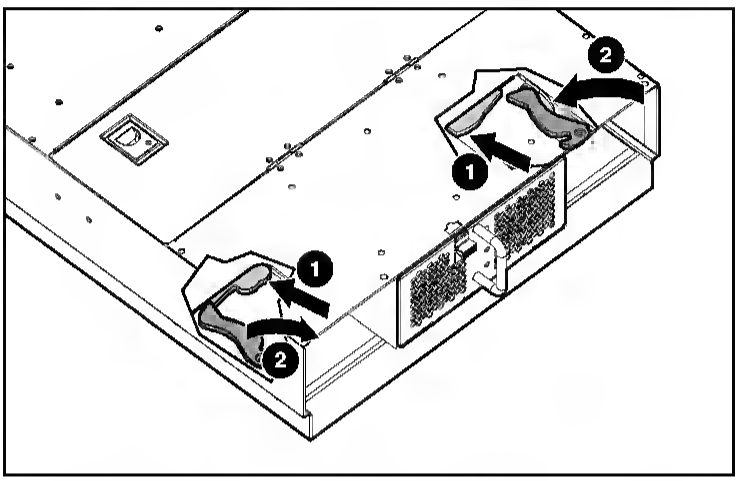


Figure 3-2: Pulling the interconnect tray ejector levers

7. Insert the interconnect tray into the enclosure (1).
8. Rotate the interconnect tray levers to the locked position (2).

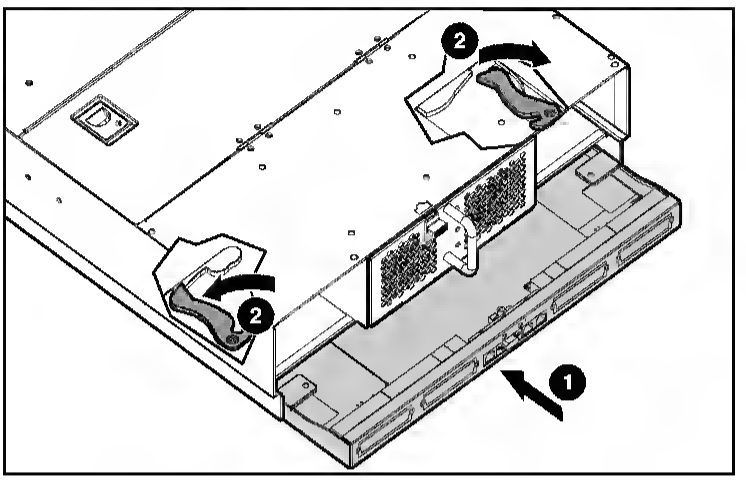


Figure 3-3: Inserting the interconnect tray and engaging the interconnect tray levers

9. Install the hot-plug power supplies (1).
10. Close the power supply handles (2).

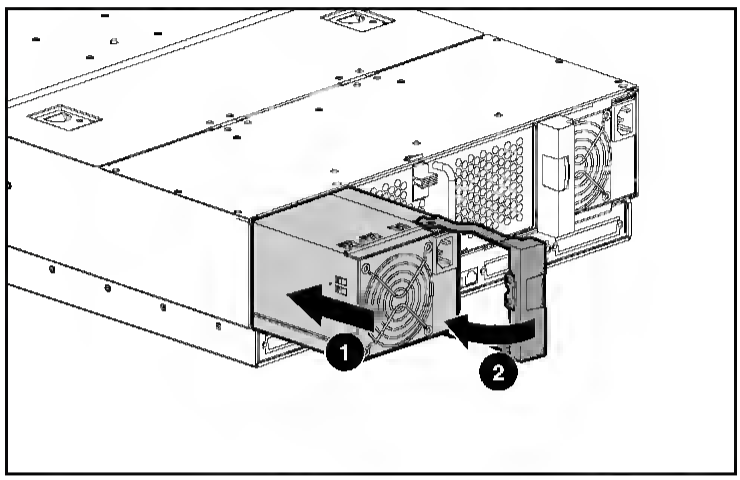


Figure 3-4: Installing a hot-plug power supply

Measuring with the Rack Template

Using the rack template, identify the proper holes for inserting the tabs on the vertical rack supports. Use a pencil to mark the top and bottom edges for the rack supports on the rack template, which identify the position for the rails supporting the enclosure.

To use the rack template to identify the required space and location for the enclosure:

1. Stand at the front of the rack and identify the front side of the rack template.
2. Starting at the top of the last item installed, secure the rack template against the front of the rack by sliding the two push tabs into the holes in the rack supports.

WARNING: Racks must be adequately stabilized before and after product installation. If you are installing an enclosure into an empty rack, you must install the enclosure at the bottom of the rack and work your way up with additional enclosures as needed.

IMPORTANT: Match the hole pattern on the rack template with the holes in the rack supports.

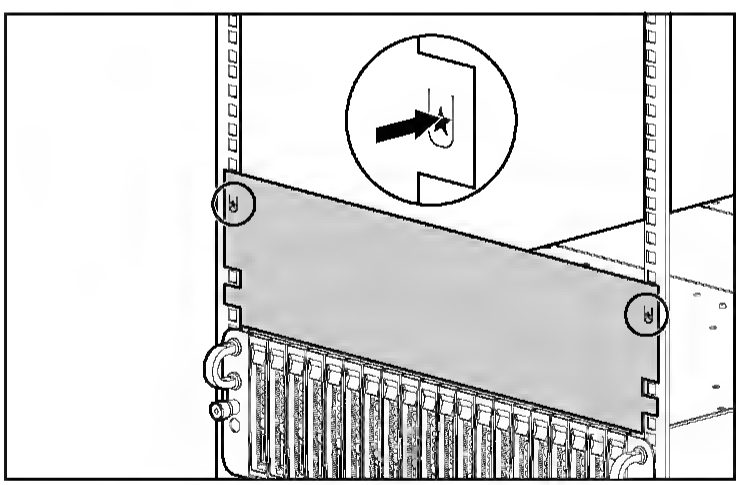


Figure 3-5: Measuring with the ProLiant BL e-Class rack template

3. Align the rack template so that its sides are square with the sides of the rack.

   IMPORTANT: Tick marks on the rack supports help you to maintain proper alignment of the rack template.

4. Use a pencil to mark an "M" at the locations on the rack where the rack rails are to be inserted (1).
5. On the rack, mark the top and bottom edges of the rack template to help align the rack template for the next enclosure (2).

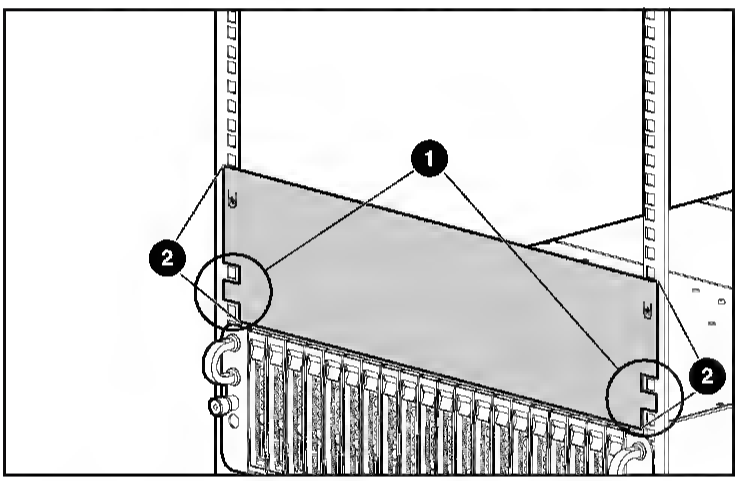


Figure 3-6: Marking the rack for ProLiant BL e-Class system installation

6. Remove the rack template from the front of the rack and move to the back of the rack.
7. Identify the back side of the rack template.
8. Repeat steps 2 through 5 for the back of the rack.

   NOTE: Store the rack template for future use.

Installing the Rack Rails

1. Measure the depth of the rack.
2. Be sure that the rail locking gear is in the unlocked position (1).
3. Press the rail locking tab to unlock the rack rail (2).
4. Adjust the rack rail to the depth of the rack using the numbers on the rack rail as a guide (3). The depth of a Compaq branded rack (29 in) is clearly indicated on the rack rails.

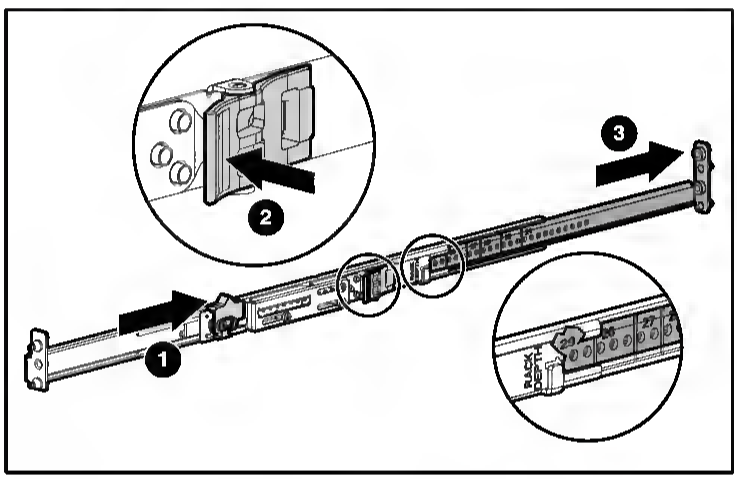


Figure 3-7: Unlocking and adjusting a rack rail

IMPORTANT: Numbers on the rack rail provide *a* gross adjustment of the depth of the rack. The rack rail *may* need to be tightened to ensure proper fit.

5. Insert the rear of the right rack rail into the rack at the marks you made when measuring with the template.

   NOTE: The rack rails feature "L" and "R" markings to identify the left and right rack rails (from the front of the rack).

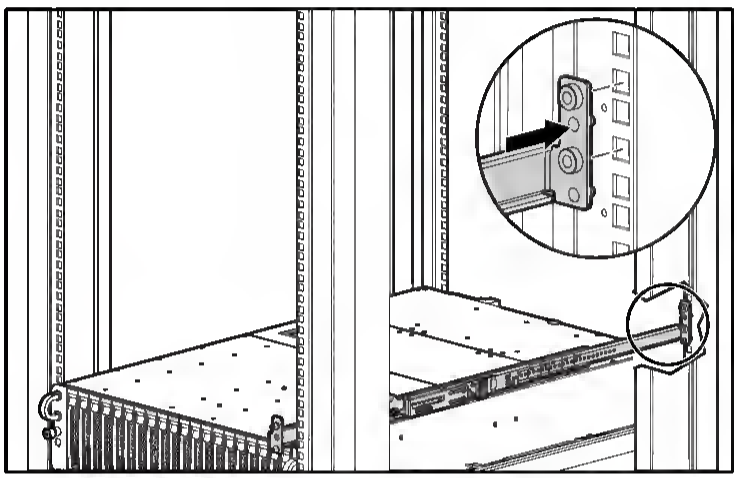


Figure 3-8: Inserting the rear of the rack rail

6. Compress the spring-loaded rack rail toward the rear of the rack (1).
7. Using the marks you made when measuring with the template, align the front of the right rail with the holes and release the rail, allowing it to lock into position (2).
8. Engage the locking gear (3).

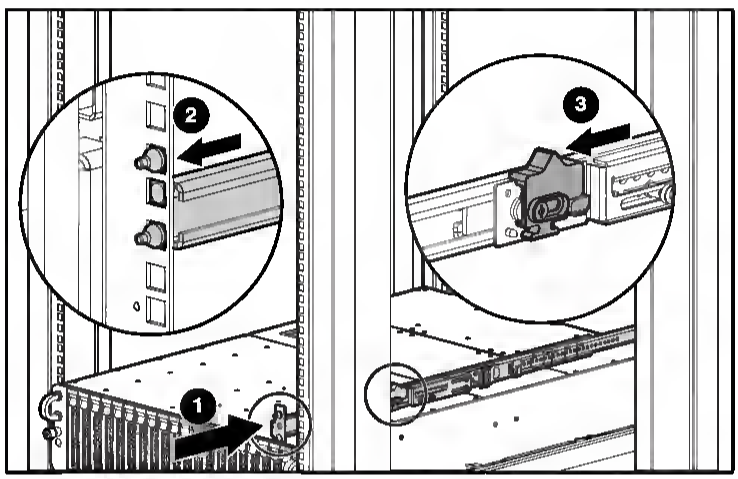


Figure 3-9: Inserting the front of the rack rail and engaging the locking gear

CAUTION: Rack rails must be installed as tightly as possible. Failure to obtain a correct fit may result in damage to equipment.

Once the right rack rail is properly installed, begin installation of the left rack rail.

Installing the Enclosure into the Rack

WARNING: Remove the two hot-plug power supplies before installing the enclosure into the rack to reduce weight.

WARNING: At least two people must lift the enclosure into the rack together. If the enclosure is loaded into the rack above chest level, a third person MUST assist with aligning the enclosure with the rails while the other two people support the weight of the enclosure.

CAUTION: Do not remove the enclosure from the rack by the thumbscrews. Use the handles located above the thumbscrews.

To load the enclosure into the rack:

1. Install the interconnect tray. See the "Installing the Interconnect Tray" section in this chapter.
2. Stand at the front of the rack.
3. Align the bottom of the enclosure with the top of the rack rails.

4. Slide the enclosure fully into the rack (1).
5. Tighten the thumbscrews to secure the enclosure in the rack (2).

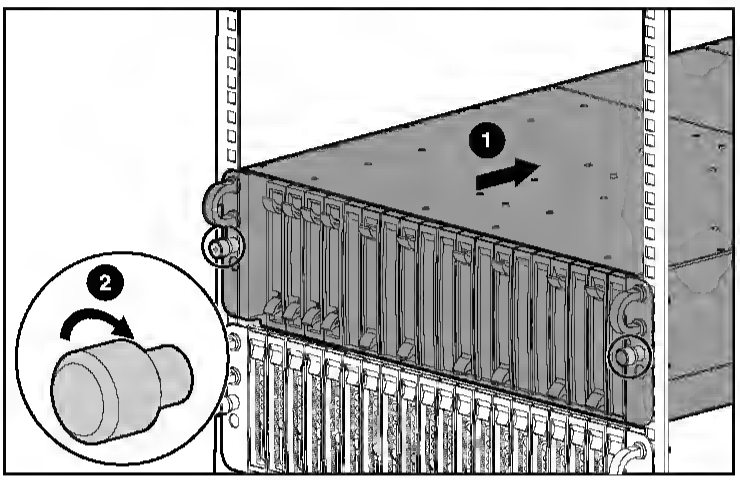


Figure 3-10: Installing the enclosure into the rack

The enclosure ships with two different sizes of thumbscrews:

- Size 10-32 thumbscrews with white hexagonal washers, which are compatible with Compaq branded racks and some HP and third-party racks
- Size M6 thumbscrews with black hexagonal washers, which are compatible with some third-party racks that require metric sizes

To replace a thumbscrew:

1. Pull the thumbscrew outward while unscrewing the head of the screw (1).
2. Remove the head of the screw (2).
3. Remove the hexagonal washer (3).

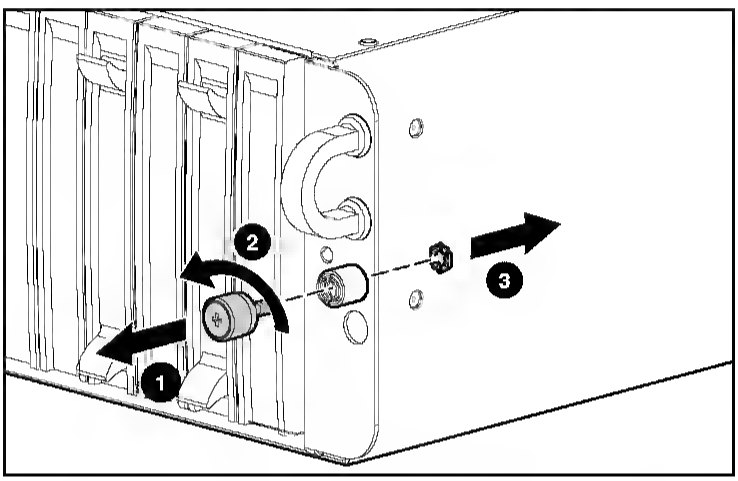


Figure 3-11: Removing a thumbscrew and hexagonal washer

4. Place the hexagonal washer at the back of the hole in the enclosure (1).
5. Insert the screw through the hole in the enclosure (2).
6. Press the head of the screw inward while compressing the spring completely (3).

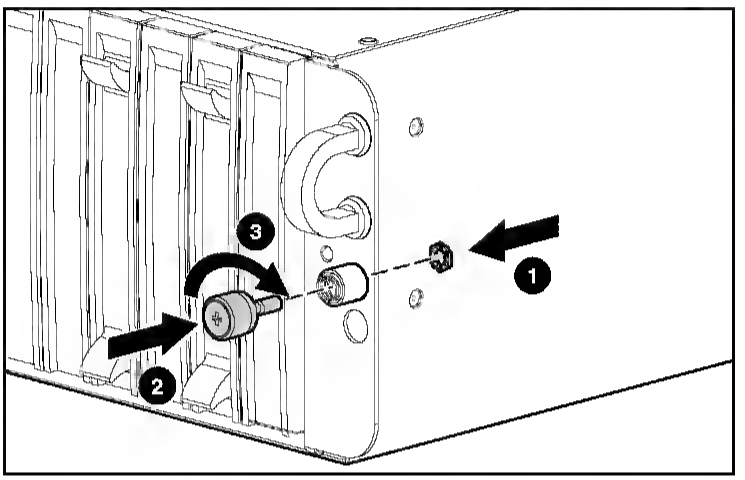


Figure 3-12: Replacing a thumbscrew, spring, and hexagonal washer

7. Screw the hexagonal washer onto the shaft of the screw until it passes all the threads and is secure within the thumbscrew housing.
8. Repeat steps 1 through 7 for the other thumbscrew.

Cabling the ProLiant BL e-Class System

ProLiant BL e-Class systems require no internal cabling. External cabling depends on the type of interconnect tray installed in the system.

The procedure for cabling an enclosure consists of the following steps:

- Identifying the interconnect tray connectors
- Cabling the server blade enclosure

Identifying Interconnect Tray Connectors

The ProLiant BL e-Class system has several interconnect tray options:

- ProLiant BL e-Class C-GbE Interconnect Switch with four Gigabit Ethernet uplink connectors for network cable reduction
- RJ-21 patch panel with four RJ-21 connectors for network cable consolidation
- RJ-45 patch panel with 40 RJ-45 connectors

NOTE: An Integrated Administrator module is included with each interconnect tray you purchase.

ProLiant BL e-Class C-GbE Interconnect Switch Connectors

The interconnect switch reduces 40 10/100 Ethernet networking connections coming from the server blades to four Gigabit Ethernet uplink RJ-45 connectors.

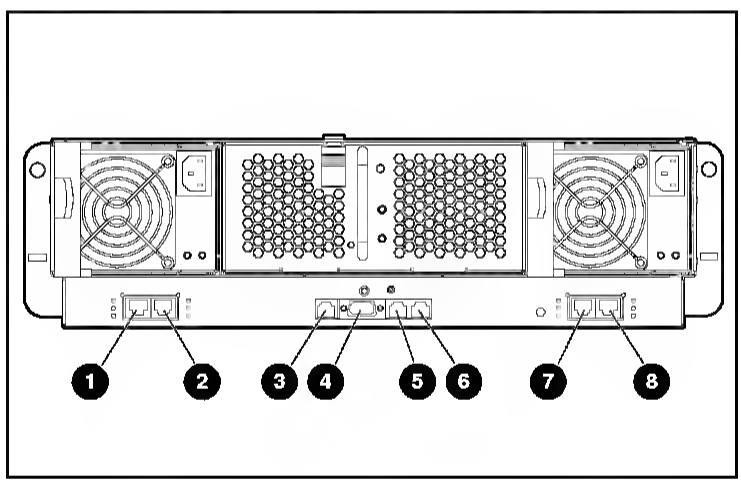


Figure 3-13: Interconnect switch connectors

Table 3-1: Interconnect Switch Connectors

Item	Description	Location
1	Gigabit Ethernet port 26 connector on switch B	Interconnect switch
2	Gigabit Ethernet port 25 connector on switch B	Interconnect switch
3	Integrated Administrator management connector (10/100 Ethernet)*	Integrated Administrator module
4	Integrated Administrator console connector (serial)*	Integrated Administrator module
5	Enclosure link (RJ-45) connector—Reserved*	Integrated Administrator module
6	Enclosure link (RJ-45) connector—Reserved*	Integrated Administrator module
7	Gigabit Ethernet port 26 connector on switch A	Interconnect switch
8	Gigabit Ethernet port 25 connector on switch A	Interconnect switch

* These items denote connectors for the Integrated Administrator module.

RJ-21 Patch Panel Connectors

The RJ-21 patch panel features a simplified connector configuration that consolidates the server blade network connections into four RJ-21 connectors.

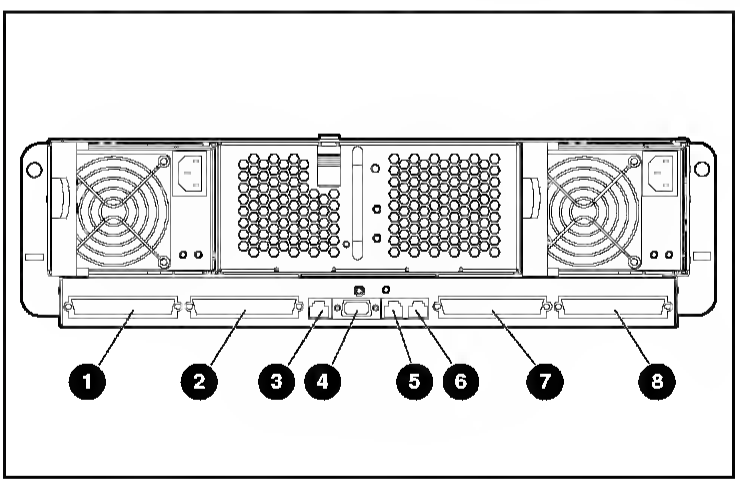


Figure 3-14: RJ-21 patch panel connectors

Table 3-2: RJ-21 Patch Panel Connectors

Item	Description	Location
1	RJ-21 connector for server blade bays 11-20 NIC 2	RJ-21 patch panel
2	RJ-21 connector for server blade bays 1-10 NIC 2	RJ-21 patch panel
3	Integrated Administrator management connector (10/100 Ethernet)*	Integrated Administrator module
4	Integrated Administrator console connector (serial)*	Integrated Administrator module
5	Enclosure link (RJ-45) connector—Reserved*	Integrated Administrator module
6	Enclosure link (RJ-45) connector—Reserved*	Integrated Administrator module
7	RJ-21 connector for server blade bays 11-20 NIC 1	RJ-21 patch panel
8	RJ-21 connector for server blade bays 1-10 NIC 1	RJ-21 patch panel

* These items denote connectors for the Integrated Administrator module.

RJ-45 Patch Panel Connectors

The RJ-45 patch panel features two RJ-45 connectors for each server blade, for a total of 40 RJ-45 connectors.

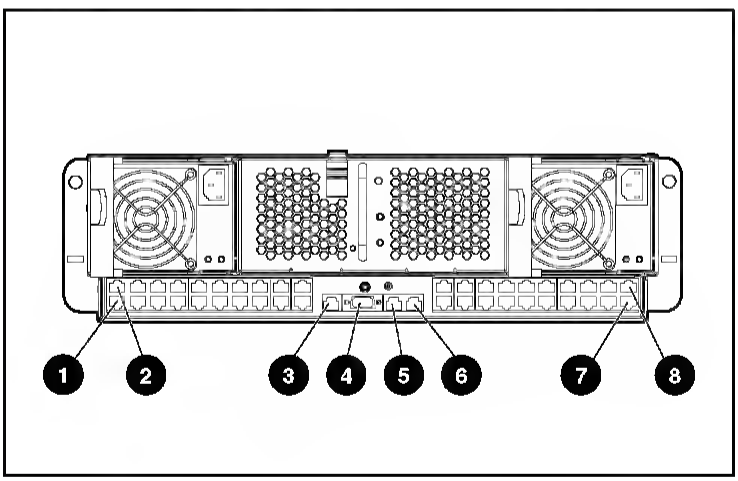


Figure 3-15: RJ-45 patch panel connectors

Table 3-3: RJ-45 Patch Panel Connectors

Item	Description	Location
1	RJ-45 connector for server blade bay 20 NIC 1	RJ-45 patch panel
2	RJ-45 connector for server blade bay 20 NIC 2	RJ-45 patch panel
3	Integrated Administrator management connector (10/100 Ethernet)*	Integrated Administrator module
4	Integrated Administrator console connector (serial)*	Integrated Administrator module
5	Enclosure link (RJ-45) connector—Reserved*	Integrated Administrator module
6	Enclosure link (RJ-45) connector—Reserved*	Integrated Administrator module
7	RJ-45 connector for server blade bay 1 NIC 1	RJ-45 patch panel
8	RJ-45 connector for server blade bay 1 NIC 2	RJ-45 patch panel

* These items denote connectors for the Integrated Administrator module.

Cabling the Enclosure

To cable a ProLiant BL e-Class server blade enclosure already installed in a rack:

CAUTION: Do not connect external devices to the enclosure link (RJ-45) connectors unless the device is listed as a supported device on the server Quickspecs. Connecting an unsupported external device to the enclosure link (RJ-45) connectors may damage the external device. Refer to the "Identifying Interconnect Tray Connectors" section of this chapter to locate the enclosure link (RJ-45) connectors.

1. For accessing and configuring the Integrated Administrator locally, connect a client device (running VT-100 terminal emulation software) to the Integrated Administrator console connector using a null-modem cable (provided with the enclosure). For accessing and configuring the Integrated Administrator over the network, connect the Integrated Administrator to the management network using the management connector.

2. Connect the server blade network connectors to the network:
   - For the interconnect switch, be sure that at least one of the uplink connectors is cabled. Any server blade NIC can be routed to any uplink connector. However, because NIC 1 is PXE-enabled by default on each server blade, it is recommended that either port 25 or 26 of switch A be used for PXE functions.
   - For the RJ-21 patch panel, be sure that cables for both NIC 1 and NIC 2 are connected for each group of ten server blades you intend to install in the enclosure. The two NIC 1 RJ-21 connectors provide PXE connectivity by default to each group of ten server blades.
   - For the RJ-45 patch panel, be sure that cables are connected for each server blade you intend to install in the enclosure. The NIC 1 RJ-45 connector for each server blade provides PXE-enabled connectivity by default.
3. Connect an AC power cord to each hot-plug power supply. Note that the enclosure will power up as soon as an AC power cord is connected to a power source and a power supply.

4. Bundle network and power cables together and route them to the outer edge of the rack.

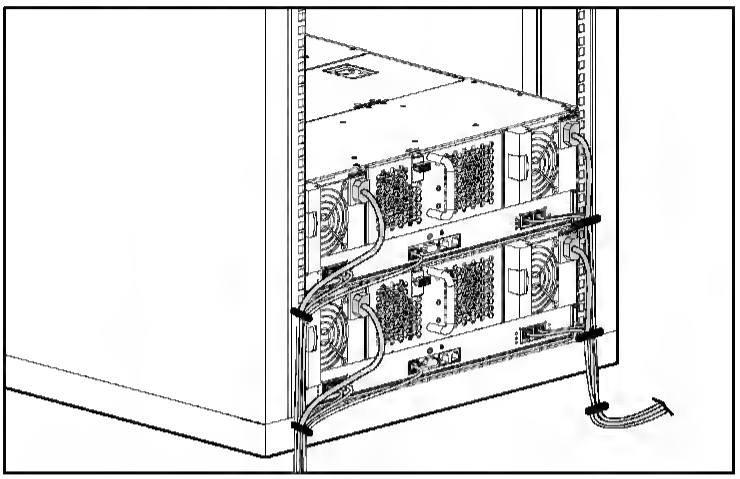


Figure 3-16: Cabling the system with the interconnect switch

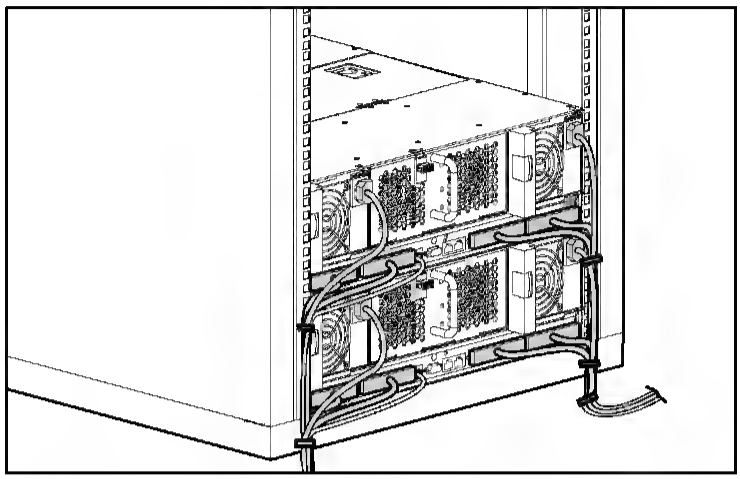


Figure 3-17: Cabling the system with the RJ-21 patch panel

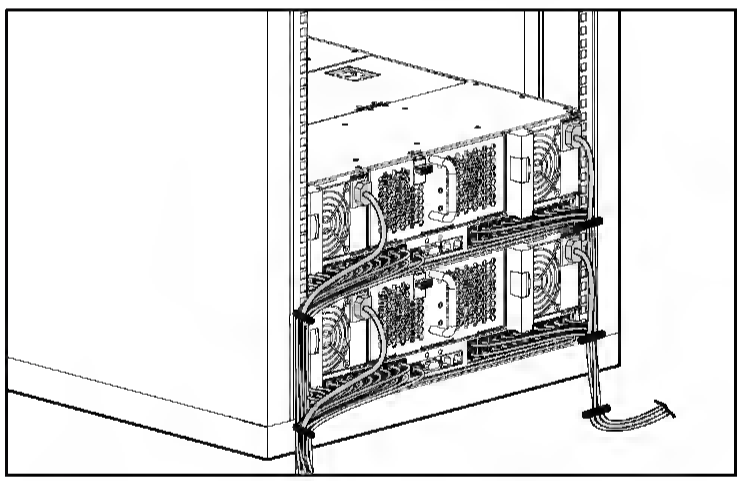


Figure 3-18: Cabling the system with the RJ-45 patch panel

IMPORTANT: Be sure to route the cables for the enclosure in a manner that provides rapid, easy access to the console connector for a local client device, such as a laptop computer.

5. Repeat steps 1 through 4 for each server blade enclosure you have installed.

RJ-21 to RJ-45 Cable Kit (Option)

HP offers a set of four cables (257076-B21), each of which connects ten RJ-45 connectors to a single RJ-21 connector for use with the RJ-21 patch panel. Use Table 3-4 to determine the specifications of this cable.

Table 3-4: Cable Pinout (Sample for Server Blades 1 through 10 NIC 1)

Ethernet Connector No.	Connector Pin No.	Signal	Connector Pin No.	Signal
Server blade 1 NIC 1	1	TxD (-)	26	TxD (+)
	2	RxD (-)	27	RxD (+)
Server blade 2 NIC 1	3	TxD (-)	28	TxD (+)
	4	RxD (-)	29	RxD (+)
Server blade 3 NIC 1	5	TxD (-)	30	TxD (+)
	6	RxD (-)	31	RxD (+)
Server blade 4 NIC 1	7	TxD (-)	32	TxD (+)
	8	RxD (-)	33	RxD (+)
Server blade 5 NIC 1	9	TxD (-)	34	TxD (+)
	10	RxD (-)	35	RxD (+)
Server blade 6 NIC 1	11	TxD (-)	36	TxD (+)
	12	RxD (-)	37	RxD (+)
Server blade 7 NIC 1	13	TxD (-)	38	TxD (+)
	14	RxD (-)	39	RxD (+)
Server blade 8 NIC 1	15	TxD (-)	40	TxD (+)
	16	RxD (-)	41	RxD (+)
Server blade 9 NIC 1	17	TxD (-)	42	TxD (+)
	18	RxD (-)	43	RxD (+)
Server blade 10 NIC 1	19	TxD (-)	44	TxD (+)
	20	RxD (-)	45	RxD (+)
	21	NC	48	NC
	22	NC	47	NC
	23	NC	48	NC
	24	NC	49	NC
	25	ground	50	ground

Null-Modem Cable

If you are cabling a serial device such as a laptop computer to the console connector on the Integrated Administrator, be sure that you use the null-modem cable provided with the enclosure and not a straight-through cable. Use Table 3-5 to determine the specifications of this cable.

Table 3-5: Cable Pinout for a Null-Modem Cable

Signal Name	EM PIN	DB-9 PIN	DB-25 PIN
TxD	3	2	3
RxD	2	3	2
RTS	7	8	5
CTS	8	7	4
GND	5	5	7
DSR	6	4	20
CD	1	4	20
DTR	4	1 & 6	6 & 8
TxD	3	2	3

Powering Up the ProLiant BL e-Class System

As soon as you connect an AC power cord to a hot-plug power supply on the rear panel, the enclosure powers up. Plug in the second power supply for redundancy.

As soon as you remove a server blade blank and install a server blade into the front panel of the enclosure, the server blade powers up.

Powering Down the ProLiant BL e-Class System

You can power down one or more server blades or the entire enclosure.

Powering Down a Server Blade

To power down a server blade:

1. Be sure that the server blade is not active.

   For specific information about server blade LEDs, see Table E-5 in Appendix E, "LEDs and Switches."

2. If the server blade is active, notify users and stop applications as necessary.
3. Shut down the operating system. This may shut off the server blade power.
4. If the server blade still has power, power down the server blade by either:
   - Using the Integrated Administrator

     or

   - Pressing the power button on the front of the server blade

IMPORTANT: Refer to the *HP ProLiant BL e-Class Integrated Administrator User Guide* to power down the server blade using the Integrated Administrator.

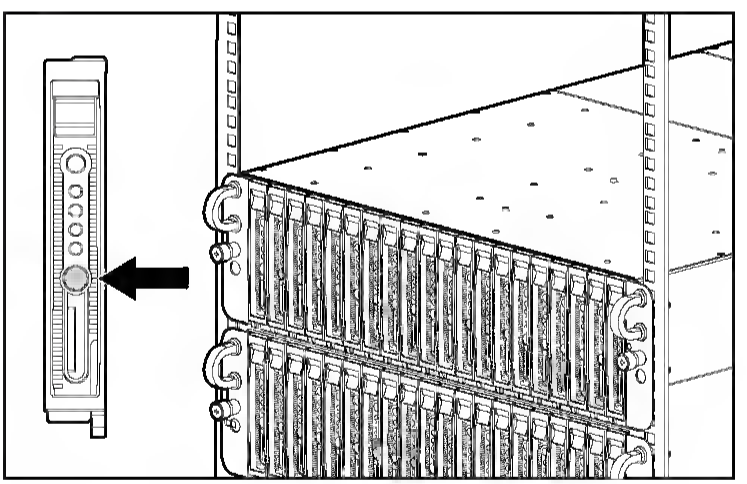


Figure 3-19: Powering down the server blade

To perform an **emergency** shut down of a server blade, press and hold the blade power button for 4 seconds.

CAUTION: Performing an emergency shutdown on a server blade may result in the loss of any unsaved data.

Powering Down the Enclosure

To perform a graceful shutdown of the enclosure and all the server blades, press the enclosure power button. If the operating system is Microsoft® Windows® 2000, the enclosure automatically performs a graceful shutdown of all server blades, and then removes power from the enclosure. If the operating system is Red Hat Linux, you must have the Linux Health driver installed in order for the server blades to shutdown gracefully.

To perform an **emergency** shut down of the enclosure and all server blades, press and hold the enclosure power button for 4 seconds.

CAUTION: Performing an emergency shutdown on the enclosure may result in the loss of any unsaved data on all server blades.

Installing a Server Blade

CAUTION: Electrostatic discharge can damage electronic components. Properly ground yourself before beginning any installation procedure. See Appendix B, "Electrostatic Discharge," for more information.

To install a server blade:

1. Determine the hardware configuration and server deployment process. See Chapter 4, "Deployment and Management."
2. Install or upgrade memory before installing server blades into an enclosure. See the "Installing Additional Memory" section in this chapter.

CAUTION: Always populate the server blade bays with either a server blade or server blade blank. Proper airflow can only be maintained when the bays are populated. Unpopulated bays can lead to improper cooling and thermal damage.

3. Remove the server blade blank:
   a. Press the ejector tabs on the server blade blank (1).
   b. Slide the server blade blank out of the bay (2).

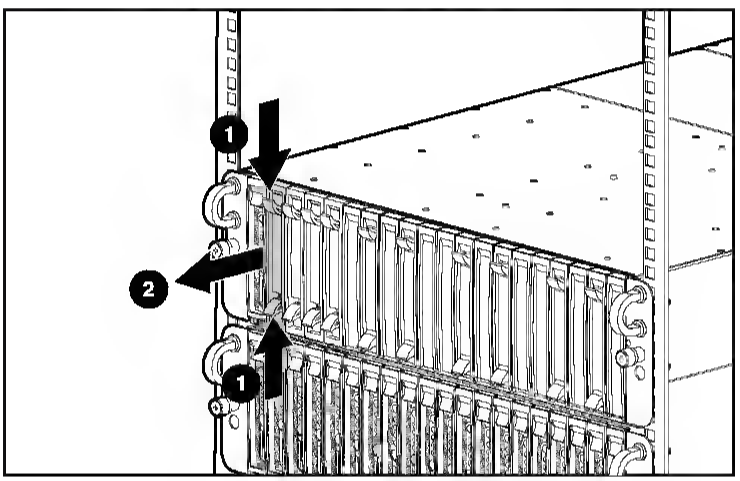


Figure 3-20: Removing a single-bay server blade blank

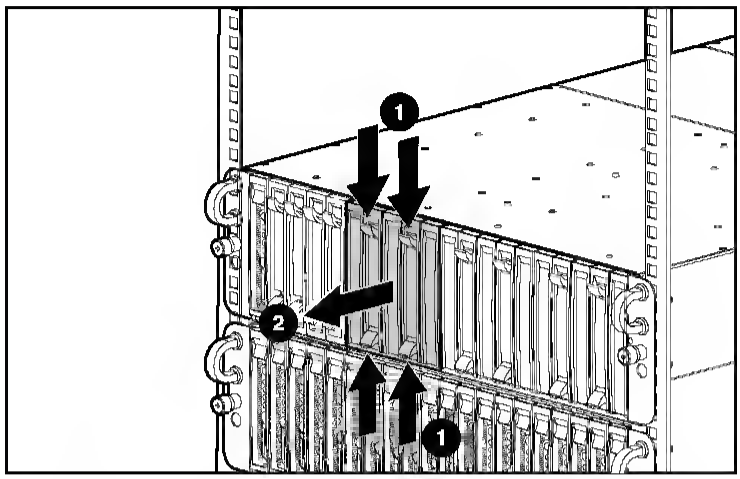


Figure 3-21: Removing a five-bay server blade blank

NOTE: Store the server blade blank for future use.

4. Install the server blade:

IMPORTANT: Before installing server blades for the first time, define the hardware configuration and server deployment process. See Chapter 4, "Deployment and Management."

a. Align the server blade with the server blade bay on the enclosure.

CAUTION: The server blade is keyed to fit only one way in the bay. If the server blade does not slide easily into the bay, be sure that the server blade is oriented correctly.

b. Slide the server blade inward until the ejector lever engages the enclosure (1).

c. Close the ejector lever until you hear an audible click that indicates the server blade is properly seated (2).

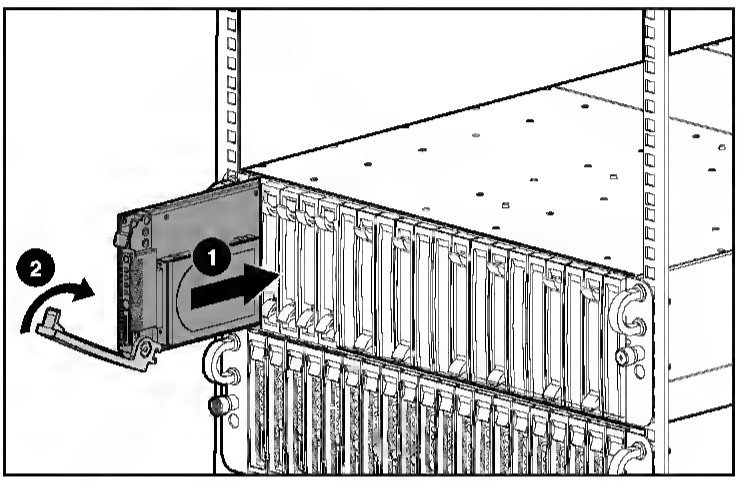


Figure 3-22: Installing a server blade

IMPORTANT Install a server blade for each of the blanks you have removed.

Repeat steps 2 to 4 for each server blade you wish to install.

Removing a Server Blade

To remove a server blade:

1. Press the release latch (1).
2. Pull down the ejector lever (2).
3. Remove the server blade from the enclosure (3).

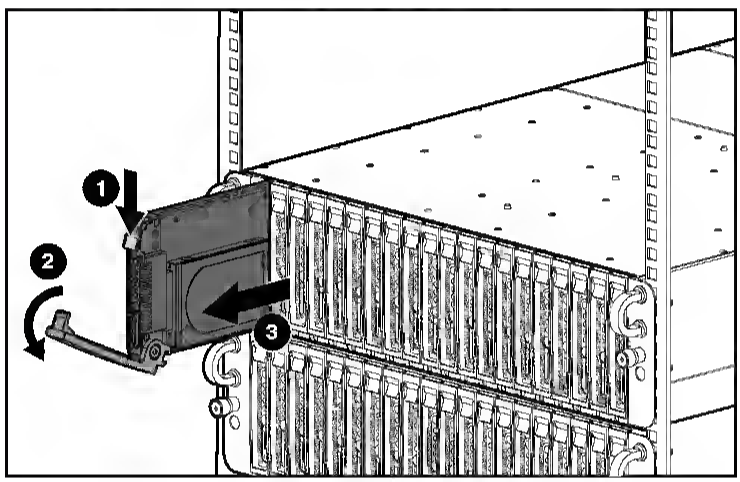


Figure 3-23: Removing a server blade

Installing Additional Memory

The server blades support the following memory features:

- Registered SDRAM memory for the ProLiant BL10e server blade; Registered DDR SDRAM memory for the ProLiant BL10e G2 server blade

  For more information, refer to QuickSpecs located on the HP website:

  www.hp.com

- ECC memory
  - — Detects and corrects single-bit memory errors
  - — Detects multi-bit memory errors

To install DIMMs on a server blade:

1. Power down the server blade. See the "Powering Down a Server Blade" section in this chapter.
2. Remove the server blade from the enclosure. See the "Removing a Server Blade" section in this chapter.
3. Place the server blade on a level, nonconductive surface.

4. Locate the DIMM socket keys on the server blade:
   - — DIMM socket 1 keys (1)
   - — DIMM socket 2 keys (2)

IMPORTANT: DIMMs on a ProLiant BL10e server blade are installed inverted from one another. If the labels on DIMM 1 are face-up, the labels on DIMM 2 are probably face-down.

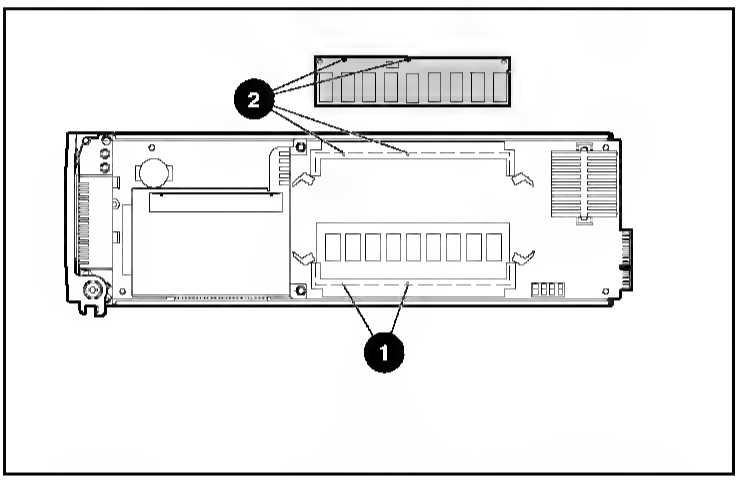


Figure 3-24: ProLiant BL10e server blade DIMM socket keys

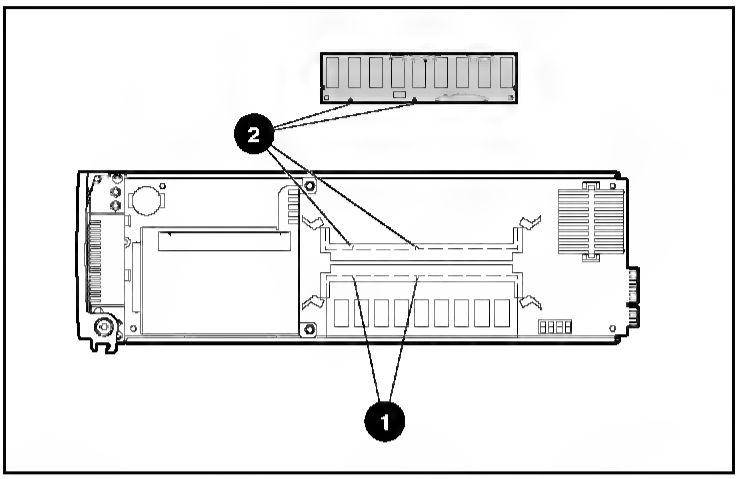


Figure 3-25: ProLiant BL10e G2 server blade DIMM socket keys

IMPORTANT: Each server blade ships with one DIMM installed.

IMPORTANT: Step 5 applies only when you wish to upgrade DIMMs.

5. Remove the existing DIMM:
   a. Release the latches on each side of the DIMM slot 1 (1).
   b. Remove the DIMM from the server blade (2).

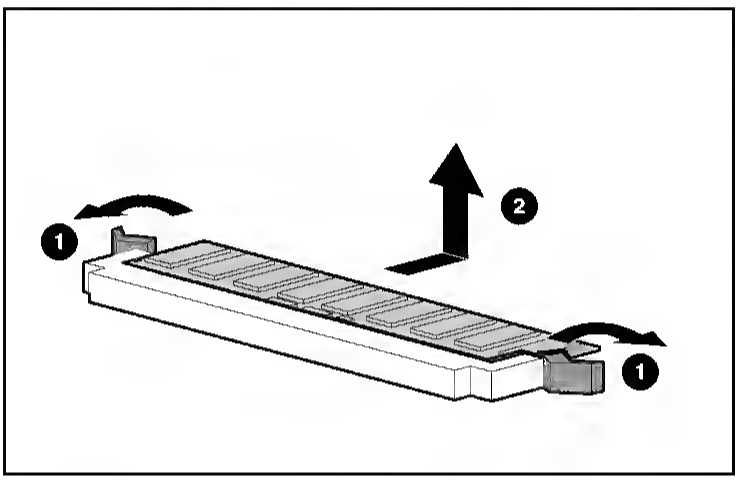


Figure 3-26: Removing a DIMM

6. Install DIMM 1:
   a. Insert the DIMM into the DIMM slot (1) until the latches snap into place.
   b. Press the latches towards each other to ensure that they are fully seated (2).

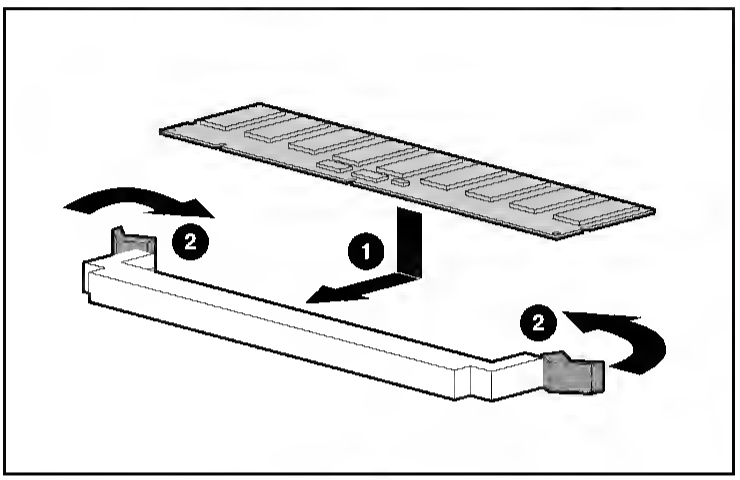


Figure 3-27: Installing a DIMM

7. Repeat step 6 to install a second DIMM into DIMM slot 2.

Attaching the Diagnostic Adapter

Attach the diagnostic adapter to the diagnostic connector on the front of the server blade in order to attach peripherals such as a keyboard, video, mouse, USB diskette drive, or USB CD-ROM drive.

IMPORTANT: You can hot-add peripheral devices using the diagnostic adapter if the devices support hot-plug capability.

To install the diagnostic adapter:

1. Power down the server blade. See the "Powering Down a Server Blade" section in this chapter.
2. Insert the diagnostic adapter into the diagnostic connector on the server blade (1).
3. Tighten the thumbscrews securing the diagnostic adapter in place (2).

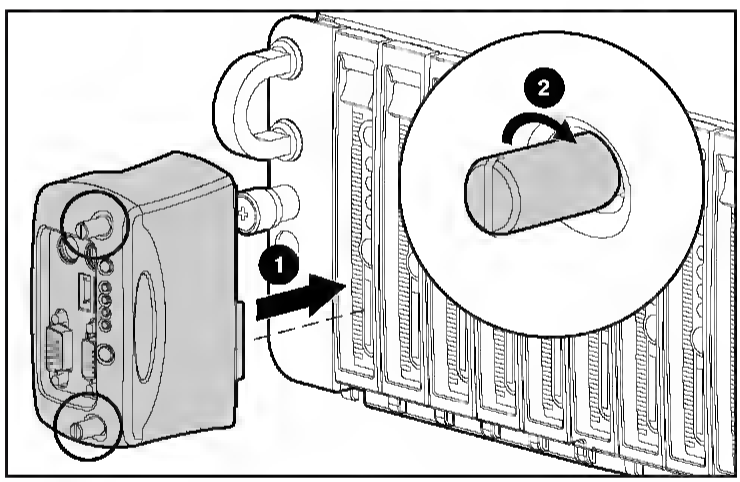


Figure 3-28: Attaching the diagnostic adapter

IMPORTANT: Because PS/2 devices do not support hot-plug technology, restart the server blade after attaching the diagnostic adapter. USB devices support hot-plug capability and do not require restarting the server blade after attachment.

Use Figure 3-29 and Table 3-6 to identify connectors on the diagnostic adapter.

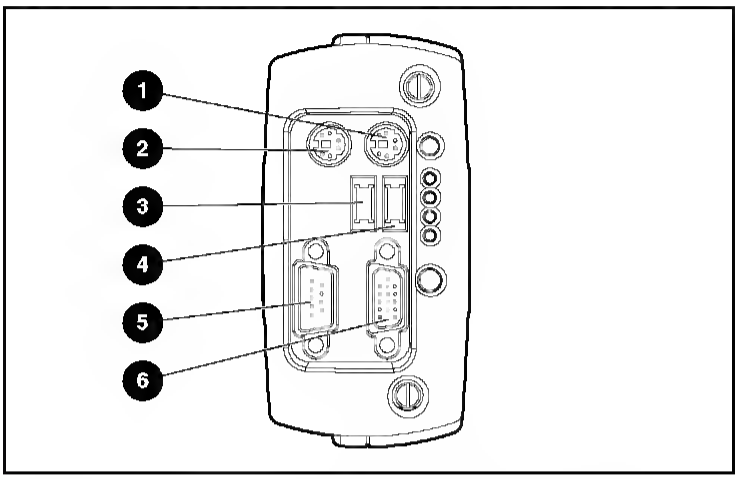


Figure 3-29: Connectors on the diagnostic adapter

Table 3-6: Connectors on the Diagnostic Adapter

Item	Description
1	Keyboard connector
2	Mouse connector
3	USB 2
4	USB 1
5	Serial connector
6	Video connector

4

Deployment and Management

This chapter provides the following information:

- An overview of available methods for deploying software on ProLiant BL e-Class server blades
  - — Automated deployment using HP ProLiant Essentials Rapid Deployment Pack
  - — Alternate deployment methods
  - — Diagnostic adapter
- A description of the configuration software and utilities supported by the ProLiant BL e-Class system
  - — Supported operating systems
  - — ROM-Based Setup Utility (RBSU)
  - — Redundant ROM support
  - — ROMPaq Utility
  - — Remote ROM Flash
  - — ProLiant BL e-Class Integrated Administrator
  - — Insight Manager 7
  - — ProLiant BL e-Class C-GbE Interconnect Switch (option) management tools and utilities

ProLiant BL e-Class Server Blade Deployment Options

The ProLiant BL e-Class server blades are designed for rapid deployment and are ideally suited for headless (unattended), network-based software installation and configuration. Rapid Deployment Pack is the optimum choice for ProLiant BL e-Class server blades and facilitates the configuration of a few or hundreds of servers from an easy-to-use, remote-based graphical deployment console. The PXE-enabled NICs and support for a bootable USB diskette drive on the ProLiant BL e-Class server blade also facilitate the use of other deployment methods.

Automated Deployment Using HP ProLiant Essentials Rapid Deployment Pack

Rapid Deployment Pack integrates two powerful products: Altiris eXpress Deployment Solution and the ProLiant Integration Module. The Deployment Server Console contains optimizations for ProLiant servers. It provides intuitive deployment jobs to deploy the standard hardware and operating system configurations and applications on any combination of server blades using both scripting and imaging, and then simultaneously deploys multiple server blades. Rapid Deployment Pack also has advanced features that can detect and display server blades based on their physical rack, enclosure, and bay locations. You can set the Deployment Server Console to automatically install pre-defined configurations on newly installed server blades.

For more information about Rapid Deployment Pack, refer to an authorized reseller, the Rapid Deployment Pack CD that ships with the enclosure, or visit the following website:

www.hp.com/servers/rdp

Alternate Deployment Methods

ProLiant BL e-Class server blades have PXE-enabled NICs and support a bootable USB diskette drive, as well as keyboard, video, mouse, and USB CD-ROM drive attacbed using the diagnostic adapter. These features enable you to use your own network-based or local, attended deployment methods for booting and installing software onto ProLiant BL e-Class server blades.

To install operating systems onto the ProLiant BL e-Class server blades with a PXE server and a DHCP server, the PXE server must be connected to NIC 1 of each server blade you wish to deploy. NIC 1 is PXE-enabled by default.

IMPORTANT: ProLiant BL e-Class server blades do not support a bootable CD-ROM. You MUST create a bootable diskette in order to boot the system using this deployment method.

For detailed instructions on network-based PXE installation for Red Hat Linux, refer to the white papers located on the following website:

ftp //ftp compaq com/pub/supportinformation/papers/163e-0102a-wwen_rev0_us pdf

To install Windows 2000 using PXE, you must use Rapid Deployment Pack (which includes pre-written scripts to install Windows 2000 Server on the server blades) or an alternate method.

If you prefer an unattended (headless) installation of the operating systems and do not wish to use Rapid Deployment Pack, you can download the SmartStart Scripting Toolkit from the following website:

www.hp.com/servers/sstoolkit

If you would like to use Insight Manager 7, copy the management agents for the ProLiant BL e-Class server blades from the Rapid Deployment Pack CD or download them from the following website:

http://h18000.www1.hp.com/products/servers/management/agents.html

IMPORTANT: Use the Management CD to install Insight Manager 7.

Diagnostic Adapter

The diagnostic adapter enables local health monitoring and management by enabling you to attach peripheral devices directly to a server blade. Using the diagnostic adapter, you can:

- View server blade event messages (See the "Server Blade Event Messages" section in this chapter.)
- Flash the server blade ROM (See the "Flashing the Server Blade ROM" section in this chapter.)
- View software information during deployment

For instructions on how to attach the diagnostic adapter, see Chapter 3, "Installing and Cabling the System."

IMPORTANT: You can hot-add peripheral devices using the diagnostic adapter if the devices support hot-plug capability.

ProLiant BL e-Class Server Blade Supported Software Utilities

Configuring the server blades includes installing an operating system, applications, and optimized drivers.

Rapid Deployment Pack enables you to auto-detect and configure the server hardware and to install optimized drivers.

Supported Operating Systems

For the most current information about operating system support on ProLiant BL e-Class server blades, refer to the operating system support matrix available at the following website:

ftp://ftp.compaq.com/pub/products/servers/os-support-matrix-310.pdf

ROM-Based Setup Utility

ROM-Based Setup Utility (RBSU) performs configuration activities and enables you to view server blade configuration information. The server blades come pre-configured and do not require interaction with RBSU, unless you would like to change the default settings. The following table contains the default settings for options in primary RBSU menus.

Table 4-1: ROM-Based Setup Utility Default Settings

Menu/Option	Default Setting
System Options	
Serial Number	
Embedded NIC 1 PXE Support	Enabled
Embedded NIC 2 PXE Support	Disabled
IPL Device Boot Order	
IPL Device Boot Order	*
Boot Controller Order	
Automatic Server Recovery	
Automatic Server Recovery Status	Enabled
Automatic Server Recovery Timeout	
Thermal Shutdown	Enabled
Server Passwords	
Set Power-On Password	Disabled
Set Administrative Password	Disabled
*The boot order is CD-ROM drive, diskette drive, hard drive, network. Availability of these devices depends on which ones are connected to the system.	

continued

Table 4-1: ROM-Based Setup Utility Default Settings *continued*

Menu/Option	Default Setting
Server Asset Text	
Set Server Info Text	Disabled
Set Admin Info Text	
Set Server Contact Text	
Advanced Options	
POST Speed Up	Enabled
POST F1 prompt	Enabled
Wake on LAN	Enabled
ROM selection	
Set CPU Corrected	
Erase Non-volatile Memory	Enabled
Drive Write Cache	Disabled
NMI Debug Button	Enabled
Custom POST Message	
Erase NVRAM/Boot Disk	

IMPORTANT: ProLiant BL e-Class server blades do not support a bootable USB CD-ROM drive.

Redundant ROM Support

ProLiant BL e-Class server blades enable you to upgrade or configure the ROM safely with redundant ROM support. The server blade has a 2-MB ROM that acts as two separate 1-MB ROMs. In the standard implementation, one side of the ROM contains the current ROM program version, while the other side of the ROM contains a backup version.

When the server blade boots, it identifies whether the current ROM bank is corrupt. If a corrupt ROM is detected, the server blade boots from the backup ROM and alerts you through POST or IML that the ROM bank is corrupt.

Two methods allow you to access the redundant ROM:

- Switching to the backup ROM through RBSU
  - — Using a monitor and keyboard using tbe diagnostic adapter
  - — Using the Integrated Administrator
- Manually forcing to the backup ROM through the server blade maintenance switch (SW1)

Switching to the Backup ROM Through ROM-Based Setup Utility

To access the RBSU using the diagnostic adapter:

1. Install the diagnostic adapter onto the server blade.
2. Install a keyboard, mouse, and monitor onto the diagnostic adapter.
3. Access RBSU by pressing the **F9** key during power up when the prompt appears in the lower right corner of the screen.
4. Click **Advanced Options**.
5. Click **ROM Selection**.
6. Click **Switch to Backup** and press the **Enter** key.
7. Press the **Esc** key to exit the current menu or press the **F10** key to exit RBSU.
8. Power cycle the server.

For details on accessing RBSU through the Integrated Administrator, refer to the *HP ProLiant BL e-Class Integrated Administrator User Guide* on the documentation CD that ships with the enclosure.

Accessing Redundant ROM Using the Server Blade Maintenance Switch

If the system does not boot, you may access the redundant ROM manually using the server blade maintenance switch (SW1). To access the redundant ROM using SW1:

1. Power down the server blade. See the "Powering Down a Server Blade" section in Chapter 3, "Installing and Cabling the System."
2. Remove the server blade from the enclosure. See the "Removing a Server Blade" section in Chapter 3, "Installing and Cabling the System."
3. Set server blade maintenance switches (SW1) 1 and 4 to on. For the location of these switches, see Appendix E, "LEDs and Switches."
4. Insert the server blade back in the server blade bay. After the system powers on, it repeatedly emits two long beeps.
5. Power down the server blade again. If necessary, perform a forced shutdown by pressing the power button for 4 seconds.
6. Remove the server blade from the enclosure again.
7. Set the server blade maintenance switches (SW1) 1 and 4 back to the default position (off).
8. Insert the server blade back into the server blade bay.
9. Power up the server blade.

If the system still does not boot, see Appendix D, "Troubleshooting."

Flashing the Server Blade ROM

When you flash the server blade ROM, ROMPaq writes over the older ROM and saves the current ROM as a backup, enabling you to switch easily to the backup ROM version. This feature protects the previous ROM version, even if you experience a power failure while flashing the ROM.

Two methods are available for flashing the ROM:

- Upgrading the server blade ROM using ROMPaq Utility
- Remote ROM flash

Upgrading the Server Blade ROM Using ROMPaq Utility

Use server blade ROMPaq utilities to upgrade the firmware (BIOS).

To use the ROMPaq Utility:

1. Download the latest version of the system BIOS for the ProLiant BL e-Class server blade onto a diskette. The latest system BIOS is available at:

   www.hp.com

2. Power down the server blade. See the "Powering Down a Server Blade" section in Chapter 3, "Installing and Cabling the System."
3. Remove the server blade. See the "Removing a Server Blade" section in Chapter 3, "Installing and Cabling the System."
4. Attach the diagnostic adapter to the server blade.
5. Attach a USB diskette drive, a keyboard, a monitor, and a mouse to the diagnostic adapter.
6. Insert the diskette into the diskette drive.
7. Install the server blade and flash the ROM. See the "Installing a Server Blade" section in Chapter 3, "Installing and Cabling the System."

Remote ROM Flash

Using the Smart Components for Remote ROM Flash with the Remote Deployment Utility (RDU) console application, Remote ROM Flash enables Windows users to upgrade the firmware (BIOS) on a server from a remote location.

To update the ROM from a remote location, download the Online Flash Utility from the HP website:

www.hp.com

If a power loss occurs during a firmware upgrade, redundant ROM support enables data recovery.

ProLiant BL e-Class Integrated Administrator

The ProLiant BL e-Class Integrated Administrator is a centralized management and monitoring system for the ProLiant BL e-Class enclosure and server blades. The Integrated Administrator acts as a combination terminal server and remote power controller, enabling out-of-band, secure, serial console connections to all server blades in the enclosure, and offers all the following:

- Full Command Line Interface (CLI) and Web interface
  - — Server blade privileges can be set on a user basis
  - — Virtual power button to power server blade on or off
  - — Ability to generate non-maskable interrupt on the server blade for crash debug and analysis through the command line interface
  - — More than 100 scriptable commands to enable automated deployment and management
- Remote administration
  - — Enables access to the serial console for the server blade
  - — Enables full control over Power-On Self Test (POST) and boot process for the server blade, including the ROM-Based Setup Utility (RBSU)
  - — Enables future manageability enhancements with the Online Integrated Administrator Firmware Update feature
- Hardware health monitoring

  The Integrated Administrator monitors and controls the enclosure fans, temperature sensors, power supplies, and server blade status.
- Offline console buffering (when not connected) and event logging
  - — Operating system console logging
  - — Server blade and enclosure hardware events

- Security features
  - Secure Shell access
  - User administration for up to 25 users
  - Event generation for invalid login attempts
  - Logging of user actions in event log
  - Selective enabling of all protocols, such as Telnet
  - Out-of-band management using Integrated Administrator's RS-232 console
  - Secure Sockets Layer (SSL) (Web interface)
  - Customer installable SSL certificates
- Increased availability
  - The Integrated Administrator is a self-contained embedded system with its own processor, memory, NIC, and flash ROM.
  - The enclosure itself is intelligent and fault-tolerant, and continues to function even if the Integrated Administrator fails.
  - The Integrated Administrator enables online firmware update with code signing to ensure only certified software releases are installed.
- Insight Manager 7 integration
  - Insight Manager 7 identifies the Integrated Administrator as a server blade "management processor."
  - The Integrated Administrator status is part of the server blade status. If the Integrated Administrator is degraded, all server blades managed by that Integrated Administrator are shown as degraded.
  - Insight Manager 7 can capture the Integrated Administrator SNMP traps.
  - Insight Manager 7 and Web agents enable the user to launch the Integrated Administrator Web interface.

The Integrated Administrator Web interface enables full access and control of the server blades and enclosure using a browser, including:

- Enclosure management
  - — Monitor fans, power supplies, and temperature
  - — Graceful enclosure and server blade power shutdown
  - — Enclosure unit identification (UID) control
  - — Interface to management tools and utilities associated with the optional interconnect switch

    For details on the management tools and utilities associated with the optional interconnect switch, refer to the *HP ProLiant BL e-Class C-GbE Interconnect Switch User Guide.*
- Server blade management
  - — Remote power (on/off/reboot) and unit identification (UID) controls
  - — Remote serial console
  - — General health status
- User management
  - — Add/remove/modify administrators/groups/users
  - — Allow two levels of user access

For more information, including instructions on flashing the Integrated Administrator ROM, refer to the *HP ProLiant BL e-Class Integrated Administrator User Guide* on the Documentation CD that ships with the server blade enclosure.

Server Blade Event Messages

The event list displays the affected components and the associated error messages. Though the same basic information is displayed, the format of the list may differ depending on whether you view it from within Insight Manager 7 or from within the Survey Utility.

Table 4-2 identifies the event types (affected components) and associated event messages.

Table 4-2: Server Blade Event Messages

Event Type	Event Message
Server Blade Environment	
Overheat condition*	System Overheating (Zone *X*)
Main Memory	
Correctable error threshold exceeded	Corrected Memory Error threshold passed (Slot *X*, Memory Module *X*)
	Corrected Memory Error threshold passed (System Memory)

continued

Table 4-2: Server Blade Event Messages *continued*

Event Type	Event Message
	Corrected Memory Error threshold passes (Memory Module unknown)
Processor	
Correctable error threshold exceeded	Processor Correctable Error threshold passed
Uncorrectable error	Processor Uncorrectable internal error
Automatic Server Recovery	
System lockup	The Integrated Administrator has issued an alert that its health state has changed **
Operating System	
System crash	Blue Screen Trap: Cause [all Windows operating systems]
	Kernel Panic: Cause [Linux]
Automatic operating system shutdown	Automatic Operating System Shutdown Initiated Due to Fan Failure
	Automatic Operating System Shutdown Initiated Due to Overheat Condition
	Fatal Exception (Number *X*, Cause)
Enclosure Environment	
Overheat Condition	The Integrated Administrator has issued an alert that its health state has changed **
Power Supply Failure	The Integrated Administrator has issued an alert that its health state has changed **
Fan Failure	The Integrated Administrator has issued an alert that its health state has changed **

* For specific operating temperature ranges, see Appendix F, "Specifications."

** Refer to the Integrated Administrator log for detailed messages.

Insight Manager 7

IMPORTANT: You can install Insight Manager 7 using the Management CD included with the enclosure or download it from the HP website.

Insight Manager 7 is a server management tool that provides in-depth fault, configuration, and performance monitoring of up to hundreds of servers (including server blades) from a single management console. You can use Insight Manager 7 to view each server blade and the Integrated Administrator of each server blade enclosure. The system parameters that are monitored describe the status of all key server blade and enclosure components. By being able to view the events that occur to these components, you can take immediate action.

Use the instructions in the following section to view and print the event list from within Insight Manager 7. You can also mark a critical or caution event as repaired after the affected component has been replaced. For example, when a failed DIMM is replaced, you can mark the event as repaired, which lowers the severity of the event.

NOTE: You can only view the list from the Recovery/Integrated Management Log screen.

Viewing the Event List

To view the event list:

1. From the Insight Manager 7, select the appropriate server blade or enclosure.
2. Click **View Device Data**. The selected server blade appears with buttons around its perimeter.
3. Click **Recovery**.
4. Click **Integrated Management Log**.
5. If a failed component has been replaced, select the event from the list, then click **Mark Repaired**.

Printing the Event List

To print the event list:

1. From the Insight Manager 7, select the hardware status icon in the device list or the appropriate server blade.
2. Click **Integrated Administrator** in the Device Links area.
3. Click **Configuration**.
4. Click **Recovery**.
5. Click **Print**.

Survey Utility

The Survey Utility is a serviceability tool that delivers online configuration capture and comparison to maximize server blade accessibility. It is on the Rapid Deployment CD in the ProLiant Essentials Foundation Pack for ProLiant BL Servers and on the HP website:

www.hp.com

Refer to the Rapid Deployment CD for information on installing and running the Survey Utility. After you run the Survey Utility, you can view the IML by loading the output of the utility (typically called SURVEY.TXT) into a text editor. The event list follows the system slot information. After you open the text file, you can print it using the print feature of the viewer.

ProLiant BL e-Class C-GbE Interconnect Switch (Option) Management Tools and Utilities

The interconnect switch offers a wide variety of out-of-band and in-band configuration and management capabilities. The interconnect switch includes a default configuration for immediate operation.

Configuration and management are supported on any four Gigabit Ethernet uplink connectors on the interconnect switch as well as on the Integrated Administrator management and serial console connectors. Supported interfaces include:

- HTTP-based using Web browser
  - — Full-featured management interface
  - — Supported on all common Web browsers
  - — Includes graphical representations of the interconnect switch
  - — Access using any Gigabit Ethernet uplink connector and the Integrated Administrator management connector
- Menu driven console with local and telnet access
  - — Full-featured management interface
  - — Access locally using the Integrated Administrator console connector or remotely using telnet
- SNMP agent support for interconnect switch management, configuration, and monitoring using generic SNMP manager with a MIB compiler
  - — SNMP V1 (RFC 1157) and RMON V1 (RFC 1757; groups: 1 Statistics, 2 History, 3 Alarm, and 9 event) support
  - — Scripting capabilities are available using an SNMP scripting utility
  - — Access using any Gigabit Ethernet uplink connector and the Integrated Administrator management connector

The interconnect switch also offers additional configuration and management features including:

- Interconnect switch configuration and restore using TFTP server
  - — Upload to and download from a TFTP server a copy of the interconnect switch configuration
  - — Enables rapid deployment of multiple interconnect switches with similar configuration
  - — Provides backup and restore capabilities

- Connector mirroring support for networking diagnostics

  Monitor network traffic on an interconnect switch connector by mirroring a copy of its data to a different (mirror) connector

- Link speed and activity LEDs on each Gigabit Ethernet uplink connector
- Multi-level username and password for all management interfaces
  - — Ability to recover from lost management-level password
  - — Configurable time-out period on Telnet and console sessions

A

Regulatory Compliance Notices

Regulatory Compliance Identification Numbers

For the purpose of regulatory compliance certifications and identification, the product has been assigned a unique series number. The series number can be found on the product nameplate label, along with all required approval markings and information. When requesting compliance information for this product, always refer to this series number. The series number should not be confused with the marketing name or model number of the product.

Federal Communications Commission Notice

Part 15 of the Federal Communications Commission (FCC) Rules and Regulations has established Radio Frequency (RF) emission limits to provide an interference-free radio frequency spectrum. Many electronic devices, including computers, generate RF energy incidental to their intended function and are, therefore, covered by these rules. These rules place computers and related peripheral devices into two classes, A and B, depending upon their intended installation. Class A devices are those that may reasonably be expected to be installed in a business or commercial environment. Class B devices are those that may reasonably be expected to be installed in a residential environment (for example, personal computers). The FCC requires devices in both classes to bear a label indicating the interference potential of the device as well as additional operating instructions for the user.

The rating label on the device shows the classification (A or B) of the equipment. Class B devices have an FCC logo or FCC ID on the label. Class A devices do not have an FCC logo or FCC ID on the label. After the Class of the device is determined, refer to the corresponding statement in the following sections.

Class A Equipment

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at personal expense.

Class B Equipment

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, whicb can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit that is different from that to which the receiver is connected
- Consult the dealer or an experienced radio or television technician for help

Declaration of Conformity for Products Marked with the FCC Logo, United States Only

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For questions regarding the product, contact us by mail or telephone:

- Hewlett-Packard Company
  P. O. Box 692000, Mail Stop 530113
  Houston, Texas 77269-2000
- 1-800-652-6672 (1-800-652-6672) (For continuous quality improvement, calls may be recorded or monitored.)

For questions regarding this FCC declaration, contact us by mail or telephone:

- Hewlett-Packard Company
  P. O. Box 692000, Mail Stop 510101
  Houston, Texas 77269-2000
- 281-514-3333

To identify this product, refer to the part, series, or model number found on the product.

Modifications

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Hewlett-Packard Company may void the user's authority to operate the equipment.

Cables

Connections to this device must be made with shielded cables with metallic RFI/EMI connector hoods in order to maintain compliance with FCC Rules and Regulations.

Canadian Notice (Avis Canadien)

Class A Equipment

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Class B Equipment

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Mouse Compliance Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation

European Union Notice

Products with the CE Marking comply with both the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community.

Compliance with these directives implies conformity to the following European Norms (the equivalent international standards are in parenthesis):

- EN55022 (CISPR 22) – Electromagnetic Interference
- EN55024 (IEC61000-4-2, 3, 4, 5, 6, 8, 11) – Electromagnetic Immunity
- EN61000-3-2 (IEC61000-3-2) – Power Line Harmonics
- EN61000-3-3 (IEC61000-3-3) – Power Line Flicker
- EN60950 (IEC950) – Product Safety

Japanese Notice

ご使用になっている装置にVCCIマークが付いていましたら、次の説明文をお読み下さい。

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。

VCCIマークが付いていない場合には、次の点にご注意下さい。

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスA情報技術装置です　この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

BSMI Notice

警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Compliance with CDRH Regulations

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration implemented regulations for laser products on August 2, 1976. These regulations apply to laser products manufactured from August 1, 1976. Compliance is mandatory for products marketed in the United States.

Compliance with International Regulations

All systems equipped with laser devices comply with appropriate safety standards including IEC 825.

Battery Replacement Notice

The computer is equipped with a lithium manganese dioxide, a vanadium pentoxide, or an alkaline internal battery or battery pack. There is a danger of explosion and risk of personal injury if tbe battery is incorrectly replaced or mistreated. Replacement is to be done by an authorized service provider using the spare designated for this product. For more information about battery replacement or proper disposal, contact an authorized reseller or an authorized service provider.

WARNING: The computer contains an internal lithium manganese dioxide, a vanadium pentoxide, or an alkaline battery pack. There is risk of fire and burns if the battery pack is not properly handled. To reduce the risk of personal injury:

- **Do not attempt to recharge the battery**
- **Do not expose to temperatures higher than 60°C (140°F).**
- **Do not disassemble, crush, puncture, short external contacts, or dispose of in fire or water.**
- **Replace only with the spare designated for this product.**

Batteries, battery packs, and accumulators should not be disposed of together with the general household waste. To forward them to recycling or proper disposal, please use the public collection system or return them to HP, authorized HP partners, or their agents.

B

Electrostatic Discharge

To prevent damaging the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

Preventing Electrostatic Damage

To prevent electrostatic damage, observe the following precautions:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly.

Grounding Methods

There are several methods for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

- Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm ± 10 percent resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.
- Use heel straps, toe straps, or boot straps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
- Use conductive field service tools.
- Use a portable field service kit with a folding static-dissipating work mat.

C

Error Messages

Use POST error messages to assist in troubleshooting and performing basic diagnostic functions. For a list of error messages specific to the ProLiant BL e-Class system, refer to the *HP ProLiant BL e-Class Integrated Administrator User Guide* located on the documentation CD that ships with the enclosure, or on the HP website:

www.hp.com

For a complete listing of error messages and other troubleshooting information, refer to the *HP Servers Troubleshooting Guide* provided on the Documentation CD or in the reference library on the HP website:

http://welcome.hp.com/country/us/eng/support.html

D

Troubleshooting

This appendix provides specific troubleshooting information for the ProLiant e-Class system. Use it to find details about enclosure and server blade startup and operation errors.

For information on LEDs and switches specific to the server blades and enclosure, see Appendix E, "LEDs and Switches."

For information about general troubleshooting techniques, diagnostic tools, error messages, and preventative maintenance, refer to the *HP Servers Troubleshooting Guide*, also included in the user documentation.

WARNING: A risk of injury or damage to the equipment from hazardous energy is present. The access door provides access to hazardous energy circuits. The door should remain locked during normal operation or troubleshooting, or the server should be installed in a controlled access location where only qualified personnel have access to the server.

This appendix includes the following topics:

- When the enclosure does not start

  You are provided with initial instructions on what to try and where to go for help for the most common problems encountered during initial enclosure startup.

- Enclosure diagnostic steps

  If the enclosure does not start after you have performed initial troubleshooting procedures, use the tables in this section to identify possible reasons for the problem, possible solutions, and references to other sources of information.

- When the server blade does not start

  You are provided with initial instructions on what to try and where to go for help for the most common problems encountered during initial POST. The server blade automatically performs this test each time you power up, before the server blade can load the operating system and start running software applications.

- Server blade diagnostic steps

  If the server blade does not start after you have performed initial troubleshooting procedures, use the tables in this section to identify possible reasons for the problem, possible solutions, and references to other sources of information.

- Problems after initial boot

  Once the server blade has passed the POST, you may still encounter errors, such as an inability to load the operating system. You are provided with instructions on what to try and where to go for help when you encounter errors after the server completes the POST.

- Other information resources

  This section provides a list of reference information available for the server.

For troubleshooting information beyond the scope of this guide, both general and specific to ProLiant BL e-Class systems, see Table D-15, "Troubleshooting Resources."

When the Enclosure Does Not Start

This section provides systematic instructions on what to try and where to go for help for the most common problems encountered during initial startup of the ProLiant BL e-Class enclosure. If you are having specific server blade trouble, see the "When the Server Blade Does Not Start" section in this appendix.

If the enclosure does not start:

1. Check the enclosure for the normal power up sequence:
   a. The front panel enclosure health LED and rear panel fan health, Integrated Administrator health, and power supply LEDs turn to solid green.
   b. The power supply fans and main fans start up.
2. Be sure that the enclosure is plugged into a working power outlet.
3. Be sure the power sources are working properly by checking the power LED on each power supply in the rear of the enclosure.

   For information regarding power sources for ProLiant servers, refer to the "Power Source" section in the *HP Servers Troubleshooting Guide* on the Documentation CD that ships with the enclosure.

   For information about the location and function of all enclosure LEDs, see Appendix E, "LEDs and Switches."
4. Be sure the power supplies are working properly by checking the fault LED on the power supplies in the back of the enclosure.
5. Be sure that the enclosure has power by checking the enclosure power LED on the rear of the enclosure.
6. Be sure the fans are functioning by checking the fan health LED on the rear panel of the enclosure.
7. Be sure the center wall assembly is delivering power to the enclosure by checking if the enclosure health LED on the front of the enclosure is illuminated.

8. If the Integrated Administrator is rebooting repeatedly, be sure that it is not rebooting due to a problem that initiates an Enclosure Self Recovery (ESR) reboot.

   Refer to the *HP ProLiant BL e-Class Integrated Administrator User Guide* on the Documentation CD that ships with the enclosure for other continuous rebooting problems.

9. Restart the enclosure by pressing the enclosure power button on the fan cage on the rear of the enclosure.

CAUTION: Pressing the enclosure power button while the enclosure is running shuts down the enclosure and all server blades.

IMPORTANT: If the enclosure does not restart, proceed to Table D-1 of the "Enclosure Diagnostic Steps" section in this appendix.

10. Be sure that connectors and components are seated properly. Refer to the *HP Servers Troubleshooting Guide* on the Documentation CD that ships with the enclosure.

Enclosure Diagnostic Steps

If the enclosure does not function properly, use Table D-1 to determine appropriate actions based on the symptoms observed. Start with question 1 and work your way through the table in order to narrow down possible causes and identify actions or solutions.

According to the answers you give to the questions in Table D-1, you are directed to the appropriate table in the section that immediately follows. That table outlines possible reasons for the problem, options available to assist in diagnosis, possible solutions, and references to other sources of information.

Table D-1: Enclosure Diagnostic Steps

Question	Action
Question 1: Is the power LED on both power supplies solid green?	If yes, continue to Question 2 of this table. If no, see Table D-2.
Question 2: Is the fault LED on both power supplies off?	If yes, continue to Question 3 of this table. If no, see Table D-3.
Question 3: Is the enclosure power LED on the rear panel green?	If yes, continue to Question 4 of this table. If no, see Table D-4.
Question 4: Is the enclosure health LED on the front of the enclosure on?	If yes, continue to Question 5 of this table. If no, see Table D-5.
Question 5: Is the local console displaying information when connected to the enclosure?	If yes, use the displayed information for further diagnosis. If no, see table D-6.
Question 6: Is the Integrated Administrator health LED green?	If yes, continue to Question 7 of this table. If no, see Table D-7.
Question 7: Is the fan health LED green?	If yes, and you are still unable to access the local console, contact HP or an authorized service provider for parts and service. If no, see Table D-8.

CAUTION: Pressing the enclosure power button while the enclosure is running shuts down the enclosure and all server blades.

Table D-2: Is the Power LED on Both Power Supplies Solid Green?

Answer	Possible Reasons	Possible Solutions
No, they are both off.	The power supply is not connected to AC power or no AC power is available.	Be sure that all power cords are connected to the power supplies.
		Be sure that all power cords are plugged into working, grounded outlets.

continued

Table D-2: Is the Power LED on Both Power Supplies Solid Green? *continued*

Answer	Possible Reasons	Possible Solutions
No, one is green and one is off.	One power supply is not connected to AC power or no AC power is available.	Be sure that the power cord is connected to the power supply. You still have adequate power, but no redundancy; go on to Table D-3.
		Be sure that the power cord is plugged into a working, grounded outlet. You still have adequate power, but no redundancy; go on to Table D-3.
No, they are both blinking green.	Both power supplies are in standby mode.	Press the enclosure power button on the redundant fan cage in the rear of the enclosure. **Caution**: Pressing the enclosure power button while the enclosure is running shuts down the enclosure and all server blades.
		Be sure that the pins on the power supplies are not damaged.
		Be sure that the power supplies are fully seated in the power supply bays.
No, one is solid green and one is blinking green.	One power supply is in standby mode.	Be sure that the pins on the power supplies are not damaged. You still have adequate power, but no redundancy; go on to Table D-3.
		Be sure that the power supplies are fully seated in the power supply bays. You still have adequate power, but no redundancy; go on to Table D-3.
Yes		If both power LEDs are solid green, go to table D-3.

Table D-3: Is the Fault LED on Both Power Supplies Off?

Answer	Possible Reasons	Possible Solutions
No, one or both are amber.	The power supply is not connected to AC power or no AC power is available.	Be sure that all power cords are connected to the power supplies.
		Be sure that all power cords are plugged into working, grounded outlets.
	An over-voltage condition has occurred.	Check the power source to be sure that the correct voltage is being delivered.
		Be sure that the pins on the power supplies are not damaged.
		Be sure that the power supplies are fully seated in the power supply bays.
	An over-temperature condition has occurred.	Be sure that nothing is preventing the power supply fan blades from spinning.
	At least one power supply fan has failed.	Contact HP or an authorized service provider for parts and service.
No, one or both are blinking amber.	The power supply has shut off due to an over-current condition.	Inspect the power supply and center wall assembly connectors for any signs of damage.
		Look at all other health LEDs to determine which component may be causing the over-current condition.
		Contact HP or an authorized service provider for parts and service.

continued

Table D-3: Is the Fault LED on Both Power Supplies Off? *continued*

Answer	Possible Reasons	Possible Solutions
No, one is amber and one is off.	An over-voltage condition has occurred on one power supply.	Check the power source to be sure that the correct voltage is being delivered.
	An over-temperature condition has occurred on one power supply.	Be sure that the pins on the power supply are not damaged.
		Be sure that the power supply is fully seated in the power supply bays.
		Be sure that nothing is preventing the fan blades from spinning.
	At least one power supply fan has failed.	You no longer have adequate cooling. Contact HP or an authorized service provider for parts and service.
No, one is blinking amber and one is off.	One power supply has shut off due to an over-current situation.	Inspect the power supply and center wall assembly connectors for any signs of damage.
		Check other health LEDs to determine if another component may be causing the over-current condition.
		Contact HP or an authorized service provider for parts and service.
Yes		If the fault LEDs on both power supplies are off, go to table D-4.

CAUTION: Pressing the enclosure power button while the enclosure is running shuts down the enclosure and all server blades.

Table D-4: Is the Enclosure Power LED on the Rear Panel Green?

Answer	Possible Reasons	Possible Solutions
No, it is off.	The cable is not properly connected between the fan backplane and the power backplane.	Be sure that the connectors on the fan cable are properly seated and not damaged.
	The interconnect tray is not fully inserted.	Remove and reseat the interconnect tray.
	The Integrated Administrator module is not properly seated.	Contact HP or an authorized service provider for parts and service.
	The fan backplane assembly has failed.	
	The connector on the power backplane is damaged.	
	The power backplane has failed.	
No, it is amber.	The enclosure is in standby mode.	Push the enclosure power button on the fan cage at the rear of the enclosure. **Caution**: Pressing the enclosure power button while the enclosure is running shuts down the enclosure and all server blades.
Yes, it is green.		If the enclosure power LED is green, go to table D-5.

Table D-5: Is the Enclosure Health LED on the Front of the Enclosure On?

Answer	Possible Reasons	Possible Solutions
No, it is off.	The enclosure status cable is disconnected from the center wall assembly or the enclosure status assembly.	Securely attach the enclosure status cable.
	The enclosure status assembly or the center wall assembly is not functioning properly.	Contact HP or an authorized service provider for parts and service.
Yes, it is amber.	A system component is degraded, but the system is still functional.	Check the local or remote console for error messages. Go to table D-6.
		Check system fans. Go to Table D-8.
		Contact HP or an authorized service provider for parts and service.
Yes, it is red.	A system component has a critical failure.	Check the local or remote console for error messages. Go to table D-6.
		Check system fans. Go to Table D-8.
		Contact HP or an authorized service provider for parts and service.
Yes, it is green.	The Integrated Administrator has not detected any degraded or failed components.	Check the local or remote console for error messages. Go to table D-6.
		Contact HP or an authorized service provider for parts and service.

Table D-6: Is the Local Management Console Displaying Information When Connected to the Enclosure?

Answer	Possible Reasons	Possible Solutions
No	The local management console may not be connected properly.	Be sure that the local management console cable is securely connected.
	The Integrated Administrator module has failed.	Go to table D-7.
	The Integrated Administrator firmware may be damaged.	If these steps do not solve the problem, contact HP or an authorized service provider for assistance.
Yes		Video is available for diagnosis. Determine the next action by observing POST progress and system event logs. Refer to the *HP Servers Troubleshooting Guide* for a complete description of each POST error message.

Table D-7: Is the Integrated Administrator Health LED Green?

Answer	Possible Reasons	Possible Solutions
No, it is off.	The Integrated Administrator is booting.	If the enclosure is powered up, wait 1 minute while the Integrated Administrator is booting. If the Integrated Administrator health LED remains off, contact HP or an authorized service provider for parts and service.
No, it is amber.	Software has detected a condition within the Integrated Administrator that requires attention.	Press the reset button on the Integrated Administrator.
		Check the system fans. Go to Table D-8.
		Contact HP or an authorized service provider for parts and service.
No, it is red.	An overtemperature condition was detected by the sensors on the Integrated Administrator module.	Be sure that the room meets temperature and airflow requirements described in the *HP ProLiant BL e-Class System Overview and Planning* white paper.
		Be sure that the system fans are functioning properly. Go to Table D-8.
Yes, it is green.	Either the Integrated Administrator console connector or the Integrated Administrator management connector is not properly connected.	If you have a serial device connected to the Integrated Administrator, be sure that it is connected with a null-modem cable and not a straight-through cable. See Table 3-5 in Chapter 3, "Installing and Cabling the System."
		Be sure that the Integrated Administrator console connector or the Integrated Administrator management connector is securely seated.
		Refer to the *HP ProLiant BL e-Class Integrated Administrator User Guide* for further troubleshooting information.

Table D-8: Is the Fan Health LED Green?

Answer	Possible Reasons	Possible Solutions
No, it is off.	The fan cable or connectors are not properly connected.	Be sure that the connectors on the fan cable are properly seated and not damaged.
	The Integrated Administrator module is not properly seated.	Contact HP or an authorized service provider for parts and service.
No, it is red.	At least two fans have failed or are not properly seated. You no longer have adequate cooling.	Open the fan cage and look for amber LEDs to determine which fans have failed. Replace all failed fans.
		Contact HP or an authorized service provider for parts and service.
No, it is amber.	At least one redundant fan has failed. The system still has adequate cooling, but is no longer redundant.	Contact HP or an authorized service provider for parts and service.
Yes, it is green.	All fans are functional.	Check the local or remote console for error messages. Go to table D-6.
		If these steps have not identified the problem, contact HP or an authorized service provider for assistance.

When the Server Blade Does Not Start

This section provides systematic instructions on what to try and where to go for help for the most common problems encountered during initial POST of a ProLiant BL e-Class server blade. The server blade must first complete this test each time you power up, before it can load the operating system and start running software applications.

If you have the same problem with several server blades, you may have an enclosure problem. See "When the Enclosure Does Not Start" section in this appendix.

If the server blade does not start:

1. If the server blade is rebooting repeatedly, be sure that the server blade is not rebooting due to a problem that initiates an ASR-2 reboot.

   You can enable ASR-2 to reboot the server blade. Should a critical error occur, ASR-2 logs the error in the IML and restarts the server blade.

   — Refer to the *HP Servers Troubleshooting Guide* on the Documentation CD that ships with the enclosure for other continuous rebooting problems.

2. Restart the server blade.

   IMPORTANT: If the server blade does not restart, proceed to Table D-9 of the "Server Blade Diagnostic Steps" section in this appendix.

3. Check the server blade for the normal power up sequence.

   Do this by checking that the sever blade health LED turns to solid green. For location and function of the sever blade health LED, see the "Server Blade and Diagnostic Adapter LEDs" section in Appendix E, "LEDs and Switches."

4. Check the monitor (installed to the server blade using the diagnostic adapter) for the following messages that ensure that the ProLiant BL e-Class ever blade meets the minimal hardware requirements and is powered up during normal operations:

   — ProLiant logo

   — Memory test

   — ROM information

   — Copyright information

— Processor initialization

— PXE initialization

— Operating system initialization

If the server blade completes POST and attempts to load the operating system, go to the "Problems After Initial Boot" section in this appendix.

Server Blade Diagnostic Steps

If the server blade does not start, or powers up but does not complete POST, answer the questions in Table D-9 to determine appropriate actions based on the symptoms observed.

According to the answers you give, you are directed to the appropriate table in the section that immediately follows. That table outlines possible reasons for the problem, options available to assist in diagnosis, possible solutions, and references to other sources of information.

Table D-9: Server Blade Diagnostic Steps

Question	Action
Question 1: Is the power LED on the server blade green?	If yes, continue to Question 2 of this table. If no, see Table D-10.
Question 2: Is the health LED on the server blade green?	If yes, continue to Question 3 of this table. If no, see Table D-11.
Question 3: Is the NIC 1 or NIC 2 LED on the server blade illuminated?	If yes, continue to Question 4 of this table. If no, see Table D-12.
Question 4: Is the monitor displaying information when connected to the server blade through the diagnostic adapter?	If yes, use the POST messages for further diagnosis, or continue to Table D-14. If no, see Table D-13.

Table D-10: Is the Power LED on the Server Blade Green?

Answer	Possible Reasons	Possible Solutions
No, it is off.	Server blade is not seated properly.	Remove server blade and re-install.
	Either the server blade or the server blade bay is not functioning properly.	Determine whether the problem lies with the server blade or with the enclosure: • Remove the server blade from the enclosure, and insert it into a different bay. If the power LED on the server blade comes on and turns green, the problem lies with the original bay. • If the power LED on the server blade does not come on, try placing a different server blade in the original bay. If the power LED on the new server blade comes on, the old server blade may have failed. • Contact HP or an authorized service provider for replacement parts and service.
No, it is amber.	The server blade is in standby mode.	Push the power button on the server blade. If the server blade does not power on, check the Integrated Administrator for bay status and messages.
	The server blade has failed.	Replace the server blade. Contact HP or an authorized service provider for replacement parts and service.
Yes		If the power LED on the server blade is green, go to Table D-11.

Table D-11: Is the Health LED on the Server Blade Green?

Answer	Possible Reasons	Possible Solutions
No, it is off.	The server blade is off.	Press the power button on the server blade.
No, it is amber.	A DIMM is not properly seated. The server emits a continuous beep.	Remove and reseat the DIMM.
	A DIMM has failed.	Replace the failed DIMM. Contact HP or an authorized service provider for replacement parts and service.
	The server blade battery has failed.	Replace the battery. Contact HP or an authorized service provider for replacement parts and service.
No, it is red.	The server blade has failed.	Contact HP or an authorized service provider for replacement parts and service.
Yes, it is green.		If the health LED on the server blade is green, go to Table D-12.

Table D-12: Is the NIC 1 or NIC 2 LED on the Server Blade Illuminated?

Answer	Possible Reasons	Possible Solutions
No	The NIC is not connected to an active network connector.	Connect the NIC to an active network connector. Go to table D-13.
Yes, it is blinking green.		The connector is working normally, the link is active, and data is being transferred. Go to table D-13.
Yes, it is green.		The connector is working normally, and the link is active. Go to table D-13.

Table D-13: Is the Monitor Displaying Information When Connected to the Server Blade Through the Diagnostic Adapter?

Answer	Possible Reasons	Possible Solutions
No	The monitor may not have power.	Be sure that the monitor power cord is plugged in and that the monitor power button has been pressed.
	Video may not be connected properly.	Be sure the video connections are properly secured. Refer to "Video Problems" in the *HP Servers Troubleshooting Guide*.
	The diagnostic adapter may not be securely attached to the server blade.	Tighten the thumbscrews to secure the diagnostic adapter to the server blade.
	Nonvolatile RAM (NVRAM) may be corrupted.	Clear NVRAM. See Appendix E for the correct switch setting.
	The system ROM and redundant ROM may be corrupted.	If these steps do not solve the problem, contact HP or an authorized service provider for assistance.
Yes		Video is available for diagnosis. Determine the next action by observing POST progress and error messages. Refer to the *HP Servers Troubleshooting Guide* for a complete description of each POST error message.

Problems After Initial Boot

Once the server blade has passed POST, you may still encounter errors, such as an inability to load the operating system. Use Table D-14 to troubleshoot server blade installation problems that occur after the initial boot.

Refer to the *HP Servers Troubleshooting Guide* for more information.

Table D-14: Problems After Initial Boot

Problem	Possible Cause	Possible Solution
You cannot install the operating system.	You cannot access the network.	Be sure that the NIC link LED on the front of the server blade is green or blinking green. If not, check the network connections on the rear of the system.
	You cannot access the PXE server.	Be sure that you are connected to the network through NIC 1(PXE enabled by default), and that the link LED is green or blinking green.
You cannot boot an installed operating system.	The IPL boot order is incorrect.	Go into RBSU and change the IPL device boot order. See Chapter 4, Table 4-2 for default order.
	The hard drive has failed.	Look for error messages to determine if a hard drive has failed.
		Contact HP or an authorized service provider for replacement parts and service.
	The Operating System image has corrupted.	Look for error messages to determine if the operating system image has corrupted.
		Re-install the Operating System.

Refer to the *HP Servers Troubleshooting Guide* for the following:

- Information you need to collect when diagnosing software problems and to provide when contacting support
- Instructions on how to upgrade the operating system and its drivers

- Information about available recovery options and advice on minimizing downtime

Other Information Resources

Refer to the following additional information for help.

Table D-15: Troubleshooting Resources

Resource	Description
HP Servers Troubleshooting Guide	This is a resource for obtaining troubleshooting information that is beyond the scope of this document. It includes general hardware and software troubleshooting information for all ProLiant servers, a complete list of error messages along with explanations of probable causes, and a list of appropriate measures. This guide ships with the server.
Maintenance and service guide	This resource provides a complete list of all replacement parts available, along with instructions on removal and replacement. Find a link to this guide on the Documentation CD or in the reference library on the HP website: http://welcome.hp.com/country/us/eng/support.html Follow the link for maintenance and service guides, and download the guide provided for the server.

continued

Table D-15: Troubleshooting Resources *continued*

Resource	Description
HP ProLiant BL e-Class Integrated Administrator User Guide	This document provides an overview of all the management tools available to ProLiant BL e-Class systems, including detailed instructions for using the Integrated Administrator. Find a link to this guide on the Documentation CD or in the reference library on the HP website: http://welcome.hp.com/country/us/eng/support.html Follow the link for software guides, and download the guide provided for the server.
HP ProLiant BL e-Class C-GbE Interconnect Switch User Guide	This document provides detailed instructions for using the interconnect switch. Find this guide on the Documentation CD that ships with the ProLiant BL e-Class C-GbE Interconnect Switch, or in the reference library on the HP website: http://welcome.hp.com/country/us/eng/support.html Follow the link for software guides, and download the guide provided for the server.

You can access information on warranties and service and support upgrades (HP Care Pack services) at

www.hp.com/services/carepack

E

LEDs and Switches

LEDs

The ProLiant BL e-Class system features LEDs in the following areas:

- Enclosure front panel LEDs
- Enclosure rear panel LEDs
  - — Enclosure rear panel LEDs with interconnect switch
  - — Enclosure rear panel LEDs with RJ-21 patch panel
  - — Enclosure rear panel LEDs with RJ-45 patch panel
- Fan health LEDs
- Server blade and diagnostic adapter LEDs

Enclosure Front Panel LEDs

Use Figure E-1 and Table E-1 to determine the location and function of the enclosure status LEDs on the front panel of the ProLiant BL e-Class server blade enclosure.

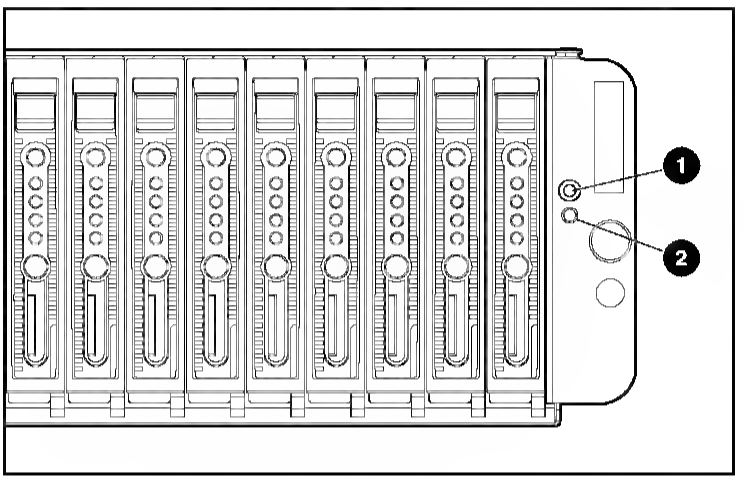


Figure E-1: Enclosure front panel LEDs

Table E-1: Enclosure Front Panel LEDs

Item	LED	Status	Description
1	Enclosure unit ID (UID)	Off =	Off
		Blue =	Identification of unit
2	Enclosure health	Off =	Enclosure off and health good
		Green =	Enclosure on and health good
		Amber =	Enclosure degraded: Redundant component has failed
		Red =	Enclosure critical: Immediate attention required, enclosure at risk of down time

Enclosure Rear Panel LEDs

Enclosure rear panel LEDs provide the following information:

- Enclosure status
- Power supply status
- Integrated Administrator status

Enclosure Rear Panel LEDs with Interconnect Switch

ProLiant BL e-Class C-GbE Interconnect Switch LEDs provide the following information:

- Interconnect switch health
- Connector speed
- Link/activity

Use Figure E-2 and Table E-2 to determine the location and function of the LEDs on the rear panel when the interconnect switch is installed.

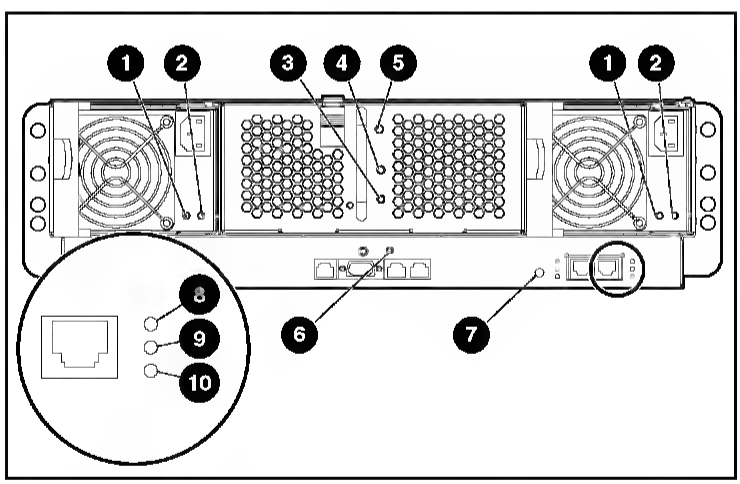


Figure E-2: Rear panel LEDS with interconnect switch

Table E-2: Rear Panel LEDs with Interconnect Switch

Item	LED	Status	Description
1	Power supply power	Off =	No power to the system
		Blinking green =	Standby, AC present
		Green =	System power turned on
2	Power supply fault	Off =	Power supply OK
		Amber =	No AC power or over-voltage or over-temperature
		Blinking amber =	Current limit
3	Enclosure power	Off =	No power to enclosure
		Amber =	Enclosure shutdown; power available; hibernate
		Green =	Enclosure power on

continued

Table E-2: Rear Panel LEDs with Interconnect Switch *continued*

Item	LED	Status	Description
4	Fan health	Off =	Enclosure off, fan health good
		Green =	Enclosure on, fan health good
		Amber =	Fan subsystem degraded
		Red =	Fan subsystem critical
5	Enclosure UID	Off =	Off
		Blue =	Identification of unit
6	Integrated Administrator health	Off =	Enclosure off, Integrated Administrator health good
		Green =	Enclosure on, Integrated Administrator health good
		Amber =	Integrated Administrator critical
7	Interconnect switch health	Green =	Interconnect switch health good
		Yellow =	Interconnect switch health degraded
		Red =	Interconnect switch health critical
		Off=	Switch boot ing/No power
8	Reserved		
9	Link\activity	Green =	Network link
		Flashing green =	Network activity
		Yellow =	Port disabled
		Off =	No network link
10	Connector speed	Green =	1000
		Yellow =	100
		Off =	10

Enclosure Rear Panel LEDs with RJ-21 Patch Panel

Use Figure E-3 and Table E-3 to determine the location and function of the LEDs on the rear panel when the RJ-21 patch panel interconnect tray is installed.

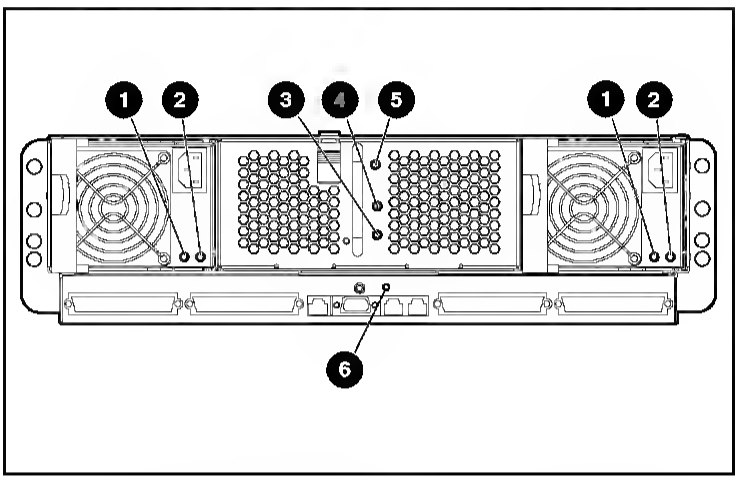


Figure E-3: Rear panel LEDs with RJ-21 patch panel

Table E-3: Rear Panel LEDs with RJ-21 Patch Panel

Item	LED	Status	Description
1	Power supply power	Off =	No power to the system
		Blinking green =	Standby, AC present
		Green =	System power turned on
2	Power supply fault	Off =	Power supply OK
		Amber =	No AC power or over-voltage or over-temperature
		Blinking amber =	Current limit
3	Enclosure power	Off =	No power to enclosure
		Amber =	Enclosure shutdown; power available; hibernate
		Green =	Enclosure power on
4	Fan health	Off =	Enclosure off, fan health good
		Green =	Enclosure on, fan health good
		Amber =	Fan subsystem degraded
		Red =	Fan subsystem critical

continued

Table E-3: Rear Panel LEDs with RJ-21 Patch Panel *continued*

Item	LED	Status	Description
5	Enclosure UID	Off =	Off
		Blue =	Identification of unit
6	Integrated Administrator health	Off =	Enclosure off, Integrated Administrator health good
		Green =	Enclosure on, Integrated Administrator health good
		Amber =	Integrated Administrator critical

Enclosure Rear Panel LEDs with RJ-45 Patch Panel

RJ-45 patch panel LEDs provides status information for each NIC of every server blade installed in the enclosure.

Use Figure E-4 and Table E-4 to determine the location and function of the LEDs on the rear panel when the RJ-45 patch panel is installed.

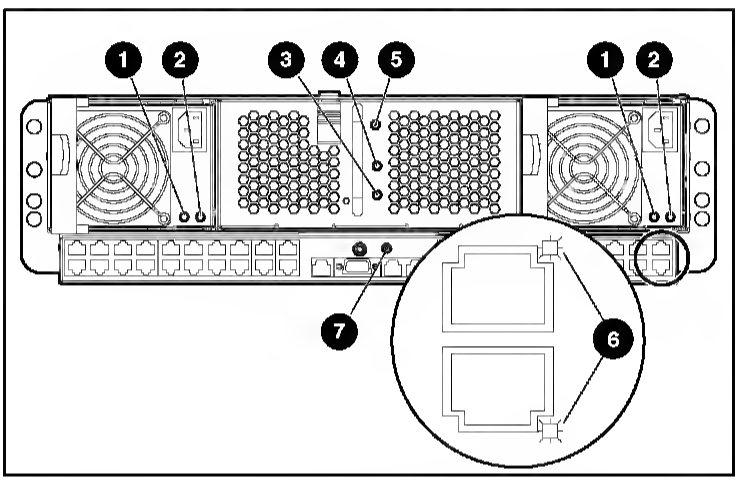


Figure E-4: Rear panel LEDs with RJ-45 patch panel

Table E-4: Rear Panel LEDs with RJ-45 Patch Panel

Item	LED	Status	Description
1	Power supply power	Off =	No power to the system
		Blinking green =	Standby, AC present
		Green =	System power turned on
2	Power supply fault	Off =	Power supply OK
		Amber =	No AC power or over-voltage or over-temperature
		Blinking amber =	Current limit
3	Enclosure power	Off =	No power to enclosure
		Amber =	Enclosure shutdown; power available; hibernate
		Green =	Enclosure power on
4	Fan health	Off =	Enclosure off, fan health good
		Green =	Enclosure on, fan health good
		Amber =	Fan subsystem degraded
		Red =	Fan subsystem critical

continued

Table E-4: Rear Panel LEDs with RJ-45 Patch Panel *continued*

Item	LED	Status	Description
5	Enclosure UID	Off =	Off
		Blue =	Identification of unit
6	RJ-45 link/activity	On =	Network link
		Off =	No network link
		Flashing =	Network activity
7	Integrated Administrator health	Off =	Enclosure off, Integrated Administrator health good
		Green =	Enclosure on, Integrated Administrator health good
		Amber =	Integrated Administrator critical

Fan Health LEDs

Use Figure E-5 and Table E-5 to determine the location and function of the fan health LEDs.

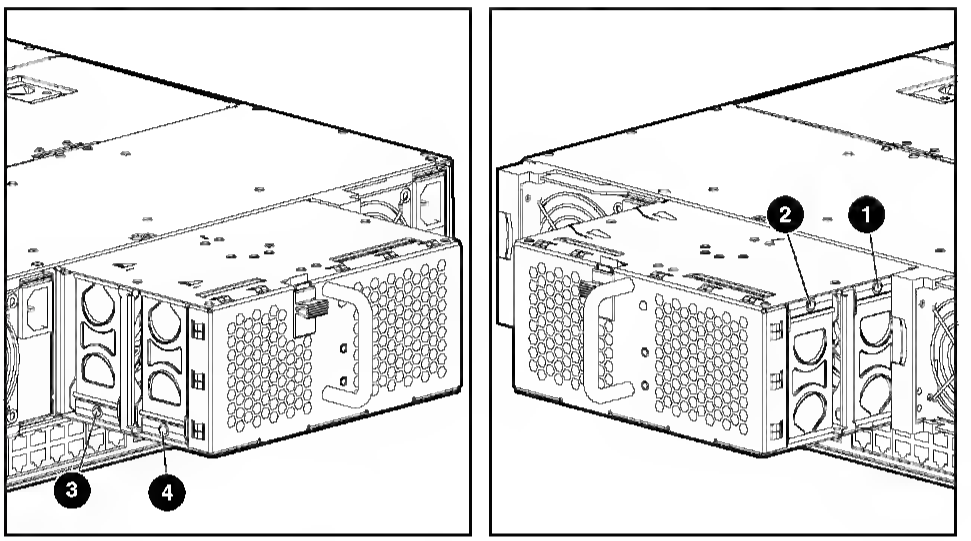


Figure E-5: Hot-plug fan health LEDs

Table E-5: Hot-Plug Fan Health LEDs

Item	LED	Status
1	Fan 1	Green = Normal Amber = Failed
2	Fan 2	
3	Fan 3	
4	Fan 4	

Server Blade and Diagnostic Adapter LEDs

The server blade and diagnostic adapter LEDs have the same orientation and function. Use Figures E6 and E7 and Table E-6 to determine the location and function of the LEDs.

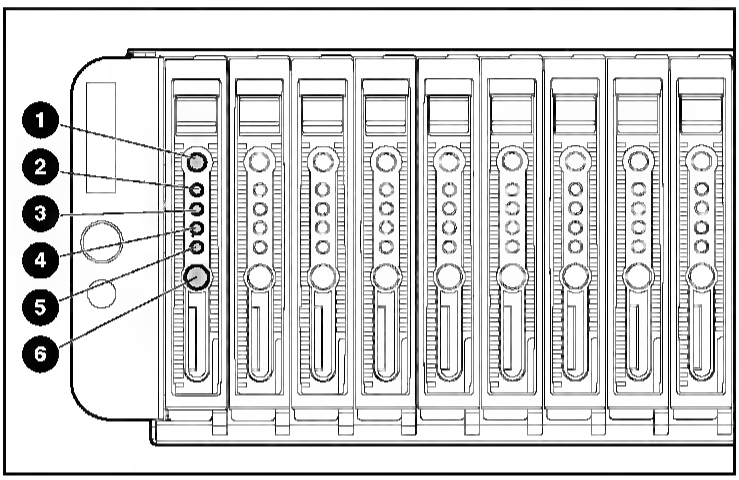


Figure E-6: Server blade LEDs

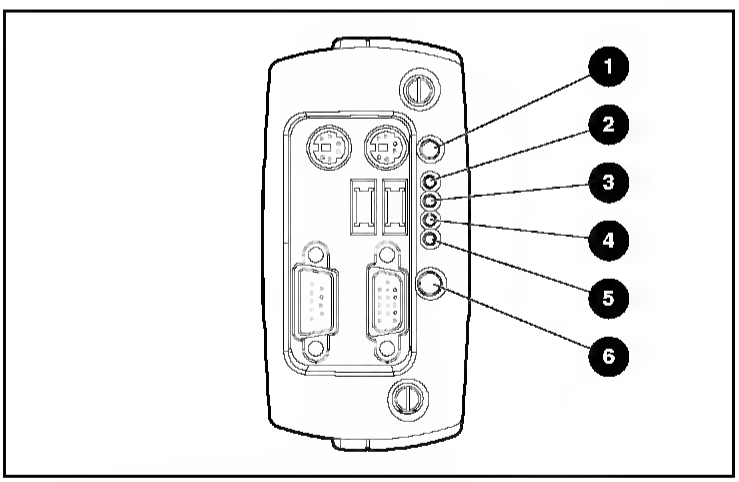


Figure E-7: Diagnostic adapter LEDs

Table E-6: Server Blade and Diagnostic Adapter LEDs

Item	LED	Status	Description
1	Unit Identification	Off =	Off
		Blue =	Identification of server blade
		Blue (blinking) =	Being accessed remotely
2	Health	Off =	Server blade off and health last good
		Green =	Server blade on and health good
		Amber =	Server blade degraded, or power-up prohibited by the Integrated Administrator
		Red =	Server blade critical
3	NIC 1	Off =	No connection
		Green =	Linked to network
		Blinking green =	Linked and activity on the network
4	NIC 2	Off =	No connection
		Green =	Linked to network
		Blinking green =	Linked and activity on the network
5	Drive activity	Off =	No drive activity
		Blinking green =	Drive activity
6	Power	Off =	No AC power to enclosure or server blade
		Amber =	Enclosure on and health good
		Green =	Server blade power turned on
		Blinking green =	Server blade in standby

Switches

The ProLiant BL e-Class system features switches in the following areas:

- Front panel
- Rear panel
- Server blade Maintenance Switch (SW1)

Front Panel

Use Figure E-8 and Table E-7 to determine the location and function of the buttons on the front panel of the enclosure and server blade.

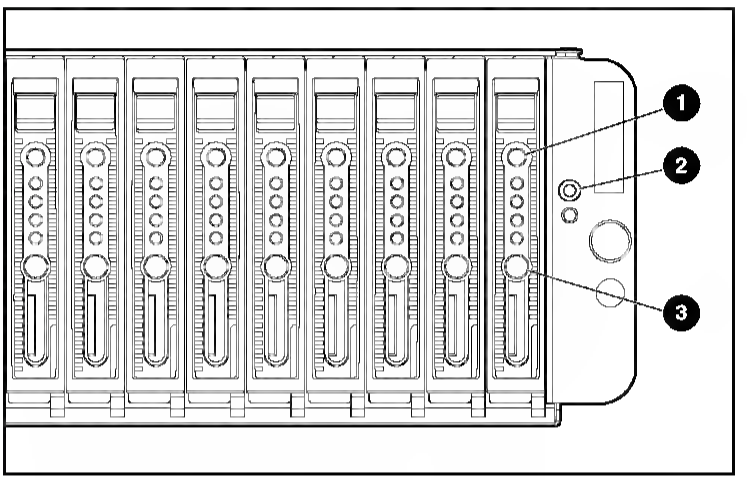


Figure E-8: Enclosure front panel buttons

Table E-7: Enclosure Front Panel Buttons

Item	Description	Function
1	Server blade UID button	Activates the UID LED for easy server blade identification
2	Enclosure UID button	Activates the UID LED for easy enclosure identification
3	Server blade power button	Powers up or down a server blade; hold down for 4 seconds to perform an emergency shutdown

Rear Panel

Use Figure E-9 and Table E-8 to determine the location and function of the buttons on the rear panel of the enclosure.

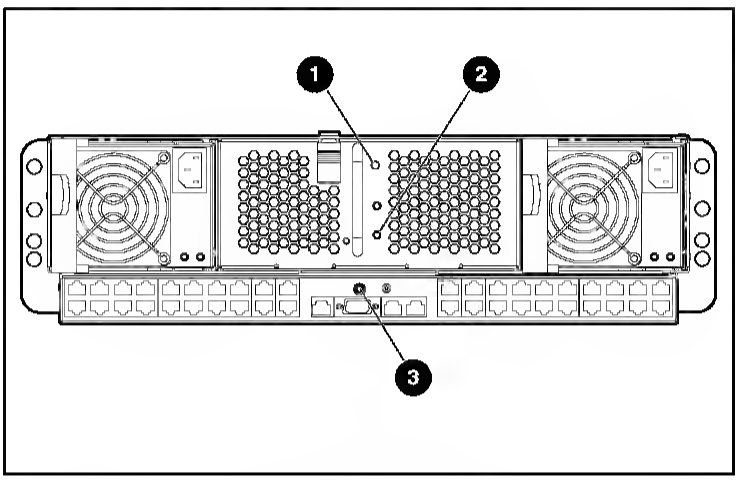


Figure E-9: Enclosure rear panel buttons

Table E-8: Enclosure Rear Panel Buttons

Item	Description	On/Off Function
1	Enclosure UID button	Activates the UID LED for easy enclosure identification
2	Enclosure power button	Powers the enclosure and all server blades up or down
3	Integrated Administrator reset button	Restarts the Integrated Administrator

Server Blade Maintenance Switch

Each ProLiant BL e-Class server blade features two front-panel power and UID buttons and an internal switch for user maintenance.

Use Figure E-10 and Table E-9 to determine the location and function of the server blade maintenance switches (SW1).

NOTE: Figure E-10 shows the ProLiant BL10e server blade.

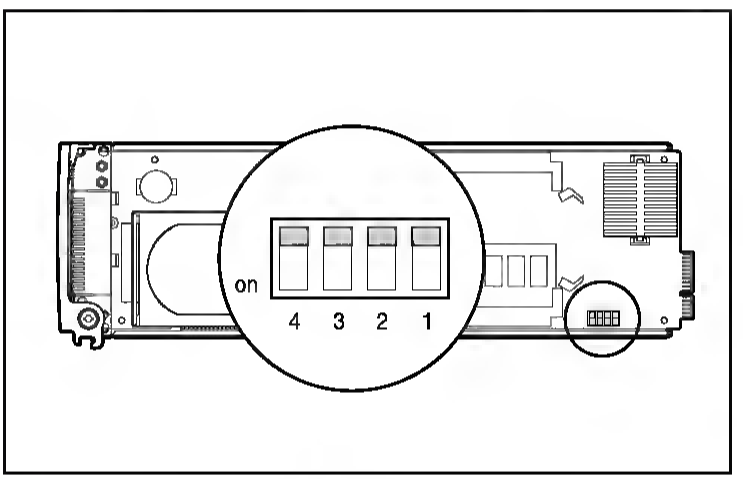


Figure E-10: Server blade maintenance switches

Table E-9: Server Blade Maintenance Switches

Switch	Default	Function
S1	Off	Reserved*
S2	Off	Configuration lock
S3	Off	Password clear
S4	Off	Invalidate configuration*

*To access redundant ROM, set S1 and S4 to on. See the "Redundant ROM Support" section in Chapter 4, "Deployment and Management."

F

Specifications

This appendix provides operating and performance specifications for the following ProLiant BL e-Class system components:

- Server blade enclosure
- Hot-plug power supply

Server Blade Enclosure

Table F-1: Enclosure Operating and Performance Specifications

Dimensions	
Height	13.34 cm (5.25 in)
Depth	68.58 cm (27 in)
Width	48.26 cm (19 in)
Weight with patch panel	
No server blades	26.76 kg (59 lb)
20 server blades	42.64 kg (94 lb)
Input requirements	
Rated input voltage	100 to 127 VAC (200 to 240 VAC)
Rated input frequency	47 to 63 Hz
Rated input current	8.5A at 120 VAC (4.3A at 240 VAC)
Rated input power	1000 W
BTUs per hour	3416
Temperature range[1]	
Operating	10° to 35°C (50° to 95°F)
Shipping, 72 hours	-40° to 60°C (-40° to 140°F)
Relative humidity (noncondensing)[2]	
Operating	10% to 90%
Non-operating	10% to 95%

[1] Operating temperature has an altitude derating of 1°C per 304.8 m (1.8°F per 1000 ft). No direct sunlight.

[2] Storage maximum humidity of 95% is based on a maximum temperature of 45°C (113°F). Minimum pressure for storage is 70 KPa.

Hot-Plug Power Supply

Table F-2: Hot-Plug Power Supply Operating and Performance Specifications

Dimensions	
Height	9.14 cm (3.579 in)
Depth	28.45 cm (10.24 in)
Width	11.43 cm (4.47 in)
Weight	2.95 kg (6.5 lbs)
Input voltage specifications	
Rated input voltage	100 to 127 VAC (200 to 240 VAC)
Frequency range	47 to 63 Hz
Rated input power	1000 W
Rated input current	8.5 A at 120 VAC (4.3 A at 240 VAC)
Maximum peak power	1167 W
Output voltage specifications	
Rated output voltage	5.05 V, 3.33 V, 12.1 V and 5 Vaux
Rated output power	600 W
Rated output current	5.01 V - 0.5 A ~ 34 A 3.33 V - 0.5 A ~ 36 A 12.1 V - 0.5 A ~ 38 A 5 Vaux - 0.2 A ~ 8 A
Maximum peak power	700 W

continued

Table F-2: Hot-Plug Power Supply Operating and Performance Specifications *continued*

Ambient temperature range[1]	
Operating	10° to 35°C (5° to 55°F)
Non-operating, shipping	-40° to 60°C (-40° to 85°F)
Relative humidity[2] (noncondensing)	
Operating	10% to 90% (5% ~ 95%)
Nonoperating	10% to 95% (5% to 95%)
Dielectric voltage withstand	
Input to output	2000 VAC Min.
Input to ground	1500 VAC Min.

[1] Operating temperature has an altitude derating of 1°C per 304.8 m (1.8°F per 1000 ft). No direct sunlight.

[2] Storage maximum humidity of 95% is based on a maximum temperature of 45°C (113°F). Minimum pressure for storage is 70 KPa.

G

System Battery

Each ProLiant BL e-Class server blade has one memory device that requires a battery for retaining stored information.

Server Blade Battery Replacement

When the server no longer automatically displays the correct date and time, you may need to replace the battery that provides power to the real-time clock. Under normal use, battery life is usually about 5 to 10 years. Use an HP 540-mAh, lithium, 3-V replacement battery (spare P/N 234556-001).

To install a new battery:

1. Power down the server blade. See the "Powering Down a Server Blade" section in Chapter 3.
2. Remove the server blade from the enclosure. See the "Removing a Server Blade" section in Chapter 3.

3. Locate the battery holder on the server blade.
4. Remove the existing battery.

NOTE: The ProLiant BL10e server blade is shown in Figure G-1 and Figure G-2.

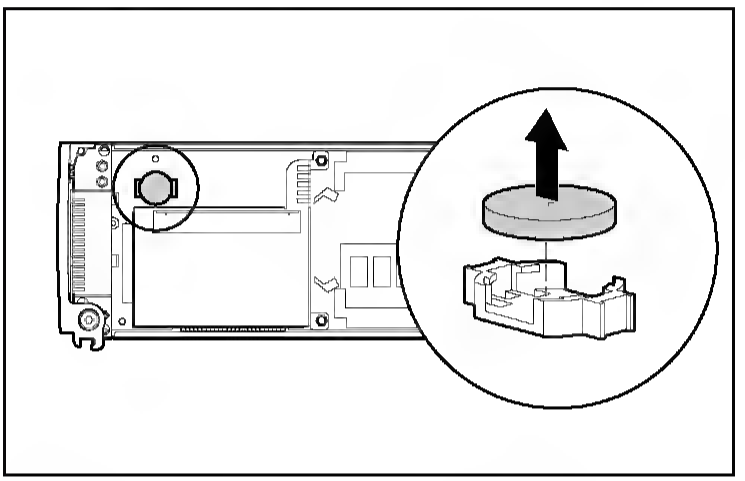


Figure G-1: Locating and removing the battery on the server blade

WARNING: For proper battery disposal, see the "Battery Replacement Notice" section in Appendix A, "Regulatory Compliance Notices."

5. Install the new battery.

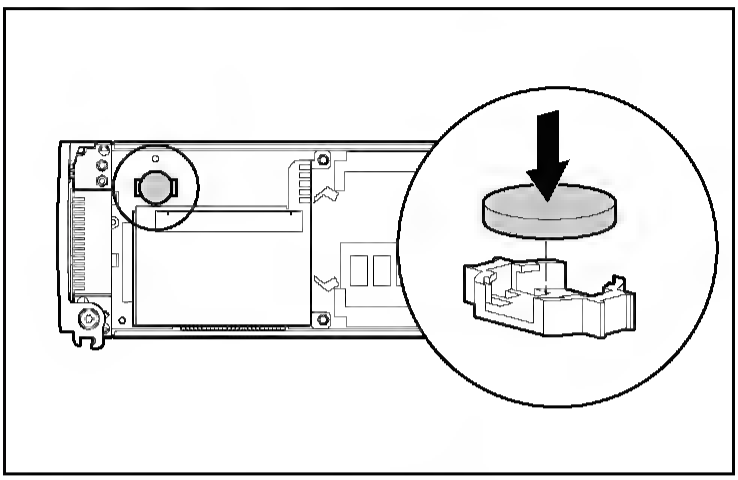


Figure G-2: Installing the new battery

6. Install the server blade in the enclosure. See the "Installing a Server Blade" section in Chapter 3.
7. Power up the server blade. See the "Powering Up the ProLiant BL e-Class System" section in Chapter 3.
8. Run RBSU to reconfigure the server blade with the new battery. See the "ROM-Based Setup Utility" section in Chapter 4.

Index

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